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ARTIFICIAL INSEMINATION

Practice in the United States

Summary of a 1987 Survey

BACKGROUND PAPER

CONGRESS OF THE UNITED STATES   OFFICE OF TECHNOLOGY ASSESSMENT

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Foreword

Artificial insemination is the oldest of the "new" reproductive technologies, yet surprisingly little is known about its practice. This background paper presents the results of a study of physician and sperm bank practice of artificial insemination in the United States. It documents the number of women undergoing artificial insemination each year, the annual cost, medical and social screening criteria for women seeking artificial insemination and men who donate semen, the genealogical recordkeeping available to the resulting children, and physician attitudes toward possible changes in artificial insemination practice.

This national survey was commissioned by OTA to complement its work on the recently published assessment *Infertility: Medical and Social Choices,* a report requested by the Senate Committee on Veterans' Affairs and the Subcommittee on Human Resources and Governmental Relations of the House Committee on Government Operations. That report presents a technical, economic, ethical, and legal analysis of the latest developments in infertility prevention and treatment, including use of new techniques such as in vitro fertilization, gamete intrafallopian transfer, and surrogate motherhood. Highlights from the artificial insemination survey were incorporated into the report. This background paper presents the survey results in more depth.

In gathering information for the development of this survey, OTA staff made site visits to 3 sperm banks and 10 in vitro fertilization clinics. OTA was assisted in the preparation of the survey instrument and the background paper by a panel of 37 advisors and reviewers selected for their expertise in survey methodology, infertility research and treatment, artificial insemination services and protocols, civil rights, and regulation of medical services.

OTA gratefully acknowledges the contribution of each of these individuals. As with all OTA background papers, responsibility for the content is OTA's alone.

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Artificial Insemination Practice in the United States
Summary of a 1987 Survey

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Chapter 1

Overview and Summary

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Chapter 1

Overview and Summary

In May 1988, OTA released its assessment *Infertility: Medical and Social Choices*, delineating options for congressional action with regard to prevention, treatment, and research on infertility. The report considered the medical, ethical, economic, and legal aspects of conventional drug and surgical therapies, in vitro fertilization, gamete intrafallopian transfer, surrogate motherhood, and artificial insemination. As part of the assessment, OTA commissioned a national survey of physician and sperm bank practice of artificial insemination, the first such survey in a decade. Two physician populations – a cross-sectional sample of primary care and reproductive care specialties and a national probability sample of members of medical fertility societies – were surveyed by mail between June and August 1987. A total of 1,558 questionnaires were completed and returned by the sampled physicians (a response rate of 61 percent), which included 37 physicians in the cross-sectional sample and 385 fertility society physicians regularly doing artificial insemination, i.e., seeing four or more insemination patients per year. An amended survey form was also sent to 30 U.S. commercial sperm banks identified by the American Association of Tissue Banks (AATB) and the American Fertility Society (AFS), and 15 of those forms were returned.

The survey estimates that 172,000 women underwent artificial insemination in 1986-87, at an average cost of $953, resulting in 35,000 births from artificial insemination by husband (AIH), and 30,000 births from artificial insemination by donor (AID). The survey confirms certain findings first reported in 1979 concerning variability in physicians' donor screening practices and their misuse of genetic histories (see box 1-A). Sperm banks were found to have more consistent donor screening practices. The survey also documents reluctance to offer artificial insemination to single women, variability in screening for infectious diseases, and widespread refusal to release even nonidentifying information about donors to their offspring, findings similarly documented in surveys of artificial insemination practice in Canada (see box 1-B), England (see box 1-C), and New Zealand (see box 1-D).

METHODS

Cross-Sectional Sample

To generate sample estimates that could be projected to the total population of U.S. physicians who conduct artificial insemination, a national cross-sectional sample was drawn from the universe of currently practicing physicians likely to become involved in infertility therapy – those in general practice and family practice or in reproductive care specialties (gynecology, obstetrics/gynecology, and urology). A proportionate sampling of the population led to relatively small sample sizes for some specialties most likely to treat fertility problems. Hence, it was decided to sample the four specialties disproportionately, to yield 1,600 cases for the cross-sectional sample of physicians.

Fertility Society Sample

Given the anticipated low physician involvement in artificial insemination and fertility treatment, a second sampling frame was constructed from the membership lists of two national professional societies, the American Fertility Society and the American Society of Andrology. The

Box 1-A.—Physician Practice of Artificial Insemination in 1977

Interest in physician practice of artificial insemination by donor increased dramatically with the 1979 publication of a survey by a group of researchers and clinicians at the University of Wisconsin. That survey was based largely on a group of American Fertility Society physicians likely to be doing artificial insemination. Four hundred seventy-one questionnaires were completed, a 66-percent response rate, and 379 physicians were identified who had offered artificial insemination in the preceding year.

Most physicians reported that about 95 percent of the requests they received were due to male infertility. A third, however, had received requests due to Rh incompatibility or fear of passing on a genetic disorder. Almost 10 percent had received requests from single women. Less frequently reported reasons included impotence, paraplegia, and exposure to mutagens.

Physicians reported that they generally selected donors themselves, rather than purchasing specimens from a sperm bank or having women provide their own donors. Sixty-two percent reported using medical students or residents as donors, 11 percent used other university or hospital personnel, and 18 percent used both. Over 75 percent matched for height and hair, skin, and eye color. Over half would also match for blood type, religious or ethnic background, and educational level. Only 5 percent reported that they did not make any effort to match donors to recipients' husbands or specifications.

Donor screening for genetic diseases consisted largely of oral family histories, as fewer than 30 percent performed any biochemical tests on donors. Rejection patterns also did not always match transmission patterns of the particular disorders. For example, nearly 75 percent reported they would reject a donor with a family history of hemophilia; this disorder is x-linked, and cannot be transmitted unless the donor himself suffers from the disease. Physicians were about as likely to reject a donor with a family history of cystic fibrosis or Huntington's chorea as one with a family history of Tay-Sachs disease, although tests were available at the time to identify Tay-Sachs carriers but not those carrying cystic fibrosis or Huntington's.

SOURCE: M. Curie-Cohen, L. Luttrell, and S. Shapiro, "Current Practice of Artificial Insemination by Donor in the United States," *New England Journal of Medicine* 300:585-590, 1979.

Box 1-B.—Physician Practice of Artificial Insemination by Donor in Ontario

In late 1983 and early 1984, a survey of physician practice of artificial insemination by donor was carried out in Ontario, Canada, pursuant to a request by the Ontario Law Reform Commission. By examining physician descriptions on the registry of the Canadian Fertility and Andrology Society, 16 physicians or practices were identified that offered artificial insemination by donor. All 16 cooperated with the survey, yielding a sample of 31 physicians. Their responses indicated that in 1983 approximately 500 women in the province of Ontario underwent artificial insemination by donor.

Recipient rejection was mostly strongly influenced by a woman's sexual orientation (7), impending divorce (6), or single state (5). Twelve of the 31 physicians reported that they never (5) or only occasionally treated (7) single women. Eight physicians responded that they never (4) or only occasionally (4) treated an unmarried couple. Nonetheless, all but one physician reported that fewer than 5 percent of the women requesting artificial insemination were single.

For donor screening, physicians most commonly did semen analysis (12 physicians), syphilis testing (12), and hepatitis testing (9). Fewer than half did a complete blood count (7), semen culture (7), genetic history (6), or blood chemistry (5). Two indicated that special genetic screening was done.

Thirteen physicians maintained records allowing them to link donors to recipients, and a similar number followed recipients' post-conception and post partum. The physicians reported very few cases of transmitted infectious disease or congenital anomalies.

SOURCE: J. Jarrell and R. Milner, "Artificial Insemination by Donor in Ontario," *Annals RCPSC* 19(2):115-118 (1986).

memberships of the two organizations are currently estimated at 11,000 and 1,000, respectively.

The total size of the sample of fertility specialists was 1,213. This included 1,000 from the AFS sample and 213 from the Andrology Society.

Box 1-C.—British Attitudes Toward Artificial Insemination by Donor

In early 1985, a multicenter study of attitudes toward artificial insemination by donor among recipients, their partners, physicians, counselors, nurses, and donors was carried out by sampling each individual attending or working in 1 of 10 clinics around England. Seventy-one percent of those solicited returned completed questionnaires. The questionnaire focused on attitudes toward recipient screening, donor rights and duties, recordkeeping, and governmental involvement.

Support for maintaining the anonymity of the donor was universal, although 43 percent favored supplying recipients with information concerning physical appearance and 25 percent with information concerning social background. Fewer felt that the resulting child ought to get this information (6 to 9 percent). Four to seven percent felt that donors should get nonidentifying physical or social information about the intended recipient. Two percent felt that donors ought to be able to choose to whom their semen would be given, and another 9 percent felt this ought to be up to the individual choice of the clinic or physician. (South Africa is the only nation that has provision for such donor choice; see U.S. Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices* (1988).)

Opinion was mixed concerning screening applicants for AID for their fitness for parenthood (as is done for adoptions), with 57 percent saying that screening should not be done, and 28 percent saying that it should. Homosexual women would be denied access to AID by a majority surveyed. Unmarried couples received a more mixed response (single women were not distinguished from unmarried couples).

In response to the question "Should AID be provided for the following groups of people?" answers were as follows:

	Yes	No	Leave to Individual Choice	Don't Know	Not Answered
unmarried couples	43	30	18	7	2
homosexual women	19	54	12	14	1
women with medical conditions making pregnancy hazardous	19	19	51	10	1
disabled people	45	8	37	9	1
those with a history of psychiatric problems	6	45	23	24	2

Control of "artificial reproduction" by a national body was supported more broadly by clinic staff (39 percent) and donors (31 percent) than by recipients (15 percent). Little support was expressed by any of these groups for a central registry of all children conceived by AID (3 percent of recipients, 16 to 19 percent of staff and donors), or a registry of donors (12 to 30 percent). Patients and staff did favor limiting the number of children born to a donor (37 to 58 percent), as well as limiting payment to expenses only (44 to 55 percent). Twenty-two percent of donors favored these two suggestions.

SOURCE: A. Walker, S. Gregson, and E. McLaughlin, "Attitudes Towards Donor Insemination – A Post-Warnock Survey," *Human Reproduction* 2: 745-750, 1987.

Sampling Method

For all samples, selection of sample within stratum was by simple random sample. Data are presented here as weighted sample estimates. Weighting is by specialty and professional society.

Field Procedures

The field procedures used in this study were designed to produce an unbiased sample of physicians from the two sampling frames. These procedures included:

Box 1-D.—Artificial Insemination by Donor in New Zealand

In 1983, a survey was done of 153 New Zealand obstetricians and gynecologists concerning their practice of artificial insemination by donor. Sixty-eight percent replied, of whom 20 physicians had performed artificial insemination in the 12 months prior to the survey, with a total of 68 conceptions in the 159 women inseminated. Fifty-four percent of those not offering artificial insemination had received requests for the service. Of those not offering artificial insemination, 5 percent cited moral objections, and 29 percent cited other personal reasons for preferring not to engage in the practice.

Eighty percent of those offering the service believed it is important to assess the psychological suitability of the recipient and her partner before proceeding with artificial insemination. Sixty-five percent believed an assessment of the recipient's social circumstances is important as well. All practitioners reported discussing the options of childlessness and adoption with the recipient and her partner, as well as the psychological, social, and legal implications of AID.

Sperm donors tended to be recruited from hospital staff and medical students. Sixty-five percent of the physicians doing AID paid their donors, and 30 percent set no limit on the number of conceptions per donor. The remaining 70 percent set a variety of limits, from five to one conception per donor. Nearly half (45 percent) felt that children conceived by AID should be told of their origins, although 95 percent felt that there should be no Health Department requirements on this point.

SOURCE: K.R. Daniels, "The Practice of Artificial Insemination of Donor Sperm in New Zealand," *New Zealand Medical Journal* 98: 235-239, 1985.

- an advance letter sent to all sample respondents indicating that the questionnaire would follow,
- a first mailing of the questionnaire with cover letter,
- a followup letter to individuals whose replies were not received within 4 weeks of the first mailing,
- a second questionnaire mailing approximately 1 week after the followup letter, and
- a telephone followup of nonrespondents among a predesignated 20-percent subset of the sample to find out why the person had not responded.

The Questionnaire

The survey used two questionnaires, one for physicians and one for sperm banks. Physicians seeing fewer than four insemination patients per year were asked to answer a few questions concerning the demographics of their practice, as well as to respond to a series of attitudinal questions concerning artificial insemination practice as a whole. Physicians with four or more insemination patients per year (i.e., those "regularly doing artificial insemination"; see box 1-E) were asked to respond to a series of detailed questions concerning their protocols and screening practices. To avoid doubling the size of the necessary sample or of the survey instrument, separate questionnaires were not used for AIH and AID practice. Questions concerning the relative proportion of a physician's practice devoted to AIH and AID allow the data concerning screening and protocol to be broken out according to whether a physician does only AIH, some AID, or predominantly AID.

Participation Rates

A total of 1,558 questionnaires were completed and returned by sampled physicians. The overall response rate was 61 percent. Due to late return of some questionnaires, analysis of the survey data is based upon only 1,473 of the returned questionnaires, including 36 from physicians in the cross-section, 346 AFS members, and 21 andrologists regularly doing artificial insemination.

As the field period ended, all outstanding cases from the predesignated 20-percent subset were contacted in an attempt to learn why they were not responding. Roughly 35 percent of the contacted nonrespondents reported that they had already completed the survey and just recently mailed it, that they intended to reply, or that they were in the process of replying. Almost 25 percent of the nonresponse sample were on vacation, not at home, or otherwise unreachable

Box 1-E.—Glossary

- **Cross-sectional sample:** A national probability sample of physicians surveyed for this report whose primary specialty is general practice, family practice, gynecology, obstetrics, obstetrics/gynecology, or urology, drawn from the American Medical Association sampling frame.
- **Fertility society sample:** In this report, a national probability sample of members of two professional societies that specialize in fertility treatment and research, the American Fertility Society and the American Society of Andrology.
- **Artificial insemination (AI):** The introduction of semen in a woman's vagina or uterus, other than by sexual intercourse. Unless otherwise specified, **AI** includes artificial insemination with semen from the recipient's husband or partner (**artificial insemination by husband** or **AIH**) or from a donor (**artificial insemination by donor** or **AID**). AID is sometimes referred to by professional societies as therapeutic insemination by donor and by feminist groups as alternative insemination by donor.
- **Human immunodeficiency virus (HIV):** The virus responsible for the autoimmune disease commonly known as AIDS. **HIV-infected** refers to those infected with the virus, whether or not they yet exhibit symptoms of AIDS or of AIDS-related complex. **Seropositive for HIV-antibodies** refers to those who have been shown by any available test to have developed antibodies to HIV. Seropositivity indicates that the person has been exposed to HIV, and may be capable of transmitting it to others.
- **Practitioners:** Physicians who perform artificial insemination.
- **Regularly doing artificial insemination:** In this report, physicians who have accepted four or more patients for artificial insemination in the past year.
- **Recipient:** A woman seeking or undergoing artificial insemination, regardless of the source of the semen. Also referred to as "patient" when describing interaction with her physician.
- **Recipient's partner:** The husband or nonmarital male partner of a recipient.
- **Donor:** A man whose semen is used for inseminating someone other than his wife or partner. An **anonymous donor** is someone not known to the recipient. A **recipient-selected donor** is a man selected by the recipient (other than her partner) to donate semen for artificial insemination.
- **Sperm bank:** A facility that collects and stores semen for artificial insemination by husband, as well as screening donors and storing semen for artificial insemination by donor. Also commonly known as a "cryobank." In this report, unless otherwise noted, all facilities are commercial sperm banks, i.e., operating for a profit.
- **Infertility treatment:** The range of medical and surgical treatments for infertility, including drugs, surgery, in vitro fertilization, gamete intrafallopian transfer, and artificial insemination.
- **Membership in a fertility society:** In this report, self-defined by the survey respondents who said that they belong to a professional society that is a fertility society.
- **Proportion AIH:** In this report, proportion of artificial inseminations in the past year using husband/partner semen. If all inseminations in the past year used husband's or partner's semen, then the practice is referred to as **exclusively AIH.**
- **Exclusively AIH:** In this report, physicians who in the previous year performed artificial inseminations using only husband/partner semen. Also referred to as **AIH-only** practice. These physicians may have done artificial insemination by donor in previous years, and so may have answered questions about their lifetime experience in the practice of AID.
- **Predominantly AID:** In this report, practices in which fewer than 25 percent of inseminations in the past year used husband's or partner's semen.
- **Single:** Unmarried and without a male or female partner. May be compared with **unmarried,** which refers to heterosexual or homosexual couples not legally married.

at the time. Roughly 15 percent of the nonresponse sample refused to participate for a variety of reasons, most of which involved the length and/or complexity of the survey instrument or the respondents' actual time available to complete the survey. A few physicians cited issues of privacy, lack of incentive or benefit in completing the survey, or a policy of refusal to participate in surveys.

Overall, the followup contact did not reveal any underlying problem of sample bias among nonrespondents. Nonresponse bias testing was not done for the 50 percent of the sperm banks failing to respond to the survey.

SCOPE OF THE SURVEY

The survey was designed primarily to serve as a source of information on the extent of artificial insemination in the United States, the patterns of donor and recipient screening for genetic and infectious diseases, and the economic or other nonmedical obstacles to obtaining the service. It was also designed to elicit information about physician attitudes toward the practice, their use of existing professional society guidelines for practice, and their attitudes toward national standards of practice, whether voluntary or mandatory. While data were gathered concerning the detailed protocols of practice, and the success rates for various methods of artificial insemination including sex selection techniques, this retrospective survey of physician experiences is not intended as a substitute for controlled, prospective clinical studies on those topics. Information on protocols and success rates gathered from the survey is here used primarily to extrapolate to the number of children conceived each year by artificial insemination, and the total annual expenditures on the procedure.

SUMMARY: PHYSICIAN PRACTICE OF ARTIFICIAL INSEMINATION

The survey estimates that nearly 11,000 physicians provide – at least occasionally – artificial insemination services to approximately 172,000 women. Live births are achieved in 37.7 percent of cases, resulting in an estimate of 65,000 babies born each year who had been conceived by artificial insemination. About half of those conceptions resulted from AIH, and half from AID. Success rates vary considerably from case to case, as do costs, depending on whether a woman is seeking AIH or AID, and whether she has any underlying infertility problem. AIH accounted for approximately 54 percent of the artificial insemination done last year in the United States.

To achieve pregnancy, on average, a woman spends $309 in initial consultations, examinations, and testing, and $92 for each of seven inseminations (done over the course of four to five cycles), for a total average cost of $953, yielding a national estimate of $164 million spent each year for this procedure. Physicians report that 51 percent of these women have insurance coverage for the procedure, and that on average the insurance covers 48 percent of the total cost. At a national level, this means that recipients pay three-quarters of the costs of artificial insemination out of their own pockets.

Overall, those currently seeking and obtaining artificial insemination, with a few exceptions, identify themselves as married couples with a male reproductive problem. Four out of five physicians (82 percent) routinely present other options to patients seeking artificial insemination. The alternative most often presented is adoption (54 percent). Eighty-five percent also routinely present possible risks of artificial insemination, generally infection or multiple births, as well as the normal risks of birth defects or complications associated with pregnancy. A relatively small proportion of practitioners (and only those doing at least some AID) present psychological complications for the recipient (3 percent), the husband

(1 percent), or the offspring (1 percent) as part of the risks normally discussed.

Recipient Screening

Physicians regularly providing artificial insemination generally require the following before accepting a woman for insemination: a personal medical history (98 percent), a fertility history (99 percent), a physical examination (96 percent), a family history (93 percent), and a personality assessment (52 percent). Young physicians (29 percent) and female physicians (39 percent) are less likely than older (60 percent) and male physicians (53 percent) to require personality assessment prior to acceptance.

Twenty-eight percent of the physicians regularly doing artificial insemination indicate that a family history of genetic disease would lead them to require genetic screening of a potential insemination recipient. A majority (74 percent) also require other diagnostic tests of patients prior to accepting them for insemination. The testing most often required by physicians doing artificial insemination is that for infertility (47 percent). The most commonly reported tests for infectious diseases were those for human immunodeficiency virus (HIV) (10 percent) and assorted sexually transmitted diseases (20 percent).

Four out of five patients who request artificial insemination are accepted. The most common reason that physicians have rejected requests is that the patient is considered unsuitable for nonmedical reasons: she is unmarried (52 percent), psychologically immature (22 percent), homosexual (15 percent), or welfare-dependent (15 percent). Other reasons include evidence of child abuse (13 percent), drug abuse (11 percent), or alcohol abuse (10 percent). Sperm banks rarely if ever have rejected men with these characteristics who applied to store semen for future AIH use.

When asked if they would be "likely to reject" an unmarried recipient with a partner, physicians were evenly divided. If the unmarried recipient does not have a partner, the proportion of physicians who had rejected or would be likely to reject the patient rises to 61 percent. If the recipient is homosexual, presumably in addition to being unmarried and without a male partner, this group increases to 63 percent.

Donor Screening

Forty-five percent of artificial inseminations conducted in the past year used donor semen: 22 percent of all artificial inseminations used donor semen from sperm banks and 21 percent from physician-selected donors, with 2 percent from other sources. Donor screening by physicians prior to acceptance is quite varied. For AID practices, half the physicians regularly doing artificial insemination require special prescreening for genetic defects or diseases from some donors.

Two-thirds of the physicians regularly doing artificial inseminations normally screen donor sperm for motility, morphology, and other signs of probable fertility, and an additional 10 percent obtain their semen samples from sperm banks, where such screening is routine. Fertility screening is done by 28 percent of those whose practice is exclusively AIH, and by 74 percent of those who use donors. A slim majority of physicians regularly doing artificial insemination (56 percent) reported requiring other diagnostic tests of donors. Seventy-eight percent of these practitioners reported testing for HIV.

Of the 24 characteristics examined by the survey, a history of serious genetic disorders was the condition for which the greatest proportion of practitioners (21 percent) had rejected a donor. Physicians also reported having rejecting donors due to drug abuse (14 percent), psychological immaturity (13 percent), alcohol abuse (11 percent), a criminal record (9 percent), less than average intelligence (8 percent), child abuse (6 percent), less than a high school education (6 percent), and less than average height (3 percent).

Forty-four percent of physicians providing artificial insemination on a regular basis require special screening to detect genetic disorders for which donors are at relatively high risk. However, the pattern of donor rejection is not always consistent with the patterns of genetic transmission of the traits for which they are being rejected. In a number of cases, a majority of physicians would reject healthy donors with family histories of sex-linked disorders that are not transmissible unless the donor himself has the condition, such as hemophilia (49 percent) or Duchenne's muscular dystrophy (61 percent). The rate of rejection for having a family history of Huntington's chorea (63 percent) is similar to that for those with a family history of Duchenne's muscular dystrophy, even though those with Huntington's are difficult to distinguish (due to late onset of the disease and expense of seeking genetic markers) yet may be capable of passing on this serious disorder to their children even if the other parent is free of the trait.

Characteristic Matching

Overall, 72 percent of physicians regularly doing artificial insemination are willing to match to at least some recipient specifications, commonly race (97 percent), eye color (94 percent), complexion (90 percent), height (90 percent), ethnic or national origin (84 percent), body type (82 percent), and hair texture (81 percent). A majority also match specifications concerning the donor's educational attainment (66 percent), age (62 percent), intelligence quotient (57 percent), and religion (56 percent), although a fairly substantial proportion of physicians who are generally willing to match at least some recipient specifications say that they would not try to match on the basis of education (29 percent), age (31 percent), intelligence quotient (37 percent), or religion (39 percent). A majority of physicians refuse to match hobbies (56 percent) or income (72 percent). Nonetheless, 39 percent will match for hobbies and 22 percent for income. Physicians are more evenly split on whether they will (45 percent) or will not (50 percent) match for special abilities.

Fresh v. Frozen Semen Use

In 1987, at the time of this survey, approximately one-third of those regularly doing artificial insemination (whether AIH or AID) relied exclusively on fresh semen, and about a quarter relied entirely on frozen semen. Of those doing AID, 22 percent used fresh semen exclusively.

Since 1985, the American Association of Tissue Banks has discouraged the use of fresh semen among its member sperm banks. Since this survey was done, use of fresh donor semen was also discouraged by AFS, the Food and Drug Administration (FDA), and the Centers for Disease Control, because it is not possible to test donors for recent exposure to the HIV virus that might render their semen infectious. Such testing requires that the semen be frozen and quarantined, and the donor retested after 3 to 6 months. Physician practice may have significantly changed since the time of this survey as a result of the new guidelines.

Most frozen semen is obtained from commercial vendors. Three-quarters of physicians who use frozen semen report that either they or their supplier have a quarantine period on the use of the semen. The average period is 3.5 months, but quarantine periods range up to 8 months. Six months is the quarantine period recommended by the FDA, and 3 months is what AATB advises.

Recordkeeping, Professional Standards, and Attitudes Toward Artificial Insemination

About half of all physicians regularly doing artificial insemination (54 percent) keep records that would permit them to identify the specific donor for any specific pregnancy, although a majority will not give anyone access to them, under any circumstances, even if all identifying information about the donor is removed.

The majority of fertility society members who do artificial insemination on a regular basis (76 percent) report that they are aware of specific professional guidelines for the selection of recipients or donors for artificial insemination. Awareness of professional standards is important because it is virtually tantamount to adoption of at least some of those procedures.

Most physicians who practice artificial insemination favor establishing national standards (unspecified as voluntary or mandatory) for donor screening by sperm banks (80 percent) or private practitioners (68 percent), for recipient screening (57 percent), and for recordkeeping (58 percent), but strongly oppose releasing identifying information about sperm donors to the children conceived with their sperm. As a group, physicians split evenly on whether there is anything wrong with sperm banks that specialize in donors with particular artistic, athletic, or intellectual gifts, and they tended to approve screening recipients on such nonmedical grounds as marital status and sexual orientation.

SUMMARY: SPERM BANK PRACTICE OF ARTIFICIAL INSEMINATION

For AID practice, 9 of the 15 facilities responding to the survey will sell samples only to doctors and 5 will sell samples to both doctors and recipients (1 bank did not respond). No banks reported selling samples only to recipients.

Screening and Matching

Almost half of the sperm banks (7 of 15) reported that they would reject requests for specimens if the recipient, as reported by her physician or as seen by them, seemed unsuitable. Two others said physicians do such screening for them. The most likely reasons to reject a recipient were that she is seropositive to HIV-antibodies (6 of 9) or shows evidence of drug abuse, alcohol abuse, or child abuse (5 of 9). Psychological immaturity and diseases such as hepatitis or cytomegalovirus are also conditions that determine rejection for 4 of 9 facilities.

All 15 sperm banks in the survey reported that they would allow recipients or their physicians to provide specifications for particular donor traits. Nearly all the banks (14 of 15) match physical characteristics such as height, weight, eye color, hair texture, and body type. Similarly, 14 facilities match recipients and donors by race, ethnic group, or national origin. Twelve will match by religion and 11 by educational attainment, special abilities, hobbies, or interests. Seven sperm banks are willing to match by intelligence quotient. Income is the characteristic that sperm banks are least willing to match (3 of 15). Another option available to recipients is sperm separation for preconception sex selection. Slightly more than half the banks (8 of 15) offer this service.

Because sperm banks are most often located in or near universities and hospitals, a majority of sperm banks claim that their inventories contain an overrepresentation of donor characteristics such as "college or graduate degree holder" (12 of 15), "better than average IQ" (8 of 15), and "better than average occupational status/achievements" (7 of 15). There is, however, an "about normal" representation of religious groups or nationalities, as stated by 12 of 15 banks.

All the facilities reported that they require some form of screening before accepting donors, but the nature and extent of the tests vary. Thirteen sperm banks screen donors for genetic defects or diseases that tend to be of ethnic origin, such as Tay-Sachs disease (in Jewish donors), sickle cell anemia (in black donors), and thalassemia (in donors of Mediterranean origin).

All 15 sperm banks reported that they screen donors for human immunodeficiency virus, regardless of whether their semen is intended for use in AIH or AID. If a donor tests negative to the presence of HIV antibodies, 13 banks quarantine the sample pending further donor testing, which will occur, on average, every 1.9 months but which may range anywhere from every 1 to 6 months. In the event that a donor tests positive for HIV antibodies, every bank surveyed reported it would notify the donor of the test results. Sperm banks split on whether they would inform the donor's spouse or partner.

In general, the survey found that sperm banks are reluctant to accept donors with a family history of genetic disorders, even those that are correctable, avoidable, or socially tolerated. In a number of cases, a majority of sperm banks would reject donors with family histories of disorders that are not widely recognized as predominately genetic.

In addition, like physicians although less often, a number of sperm banks would reject donors with family histories of hemophilia or Duchenne's muscular dystrophy but who were themselves healthy, despite the fact that they could not pass on these diseases. Sperm banks almost uniformly, however, screened out donors with family histories of cystic fibrosis or Huntington's chorea.

Recordkeeping, Professional Standards, and Attitudes Toward Artificial Insemination

At least 11 of the 15 sperm banks keep detailed records for each donor, which often includes information such as the number of women inseminated, number of pregnancies achieved, number of children born, the donor's physical examination, the donor's family genetic history, and any followup examinations of the donor. The majority of facilities will not allow offspring, recipients, recipients' partners, or the donors themselves access to these records.

The sperm banks surveyed have generally adopted professional guidelines and procedures as part of their protocols for artificial insemination, with most using those set forth by AATB or AFS. Members of AATB are bound by its standards.

Establishing national standards (unspecified as voluntary or mandatory) for donor insemination would be favored by most banks, with 14 supporting national standards for donor screening, 13 favoring standards for recordkeeping, and 11 favoring standards for recipient screening. Involvement by national medical societies and Federal public health agencies to assure the safety and quality of artificial insemination practice is more favored than involvement by peer review organizations.

Those responding for the sperm banks generally disapproved of facilities that specialize in donors with intellectual, artistic, or athletic gifts, despite the fact that their own donor pools and screening processes tend to overrepresent educational attainment, and the fact that physicians as a group split almost evenly on this question. They did, however, split evenly on screening recipients for social characteristics, such as marital status or sexual orientation, whereas physicians tended to approve of recipient screening on such nonmedical grounds.

Chapter 2

Survey Data: Physician Practice

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Chapter 2

Survey Data: Physician Practice

PREVALENCE AND DISTRIBUTION OF ARTIFICIAL INSEMINATION

Thirty-three percent of the cross-sectional sample of physicians reported that they would provide infertility services (table 2-1), with an average of 32 patients treated in the last year (table 2-2), suggesting that **approximately 1.2 million patients were treated by primary care and reproductive care physicians last year for infertility problems** (table 2-3). Of course, this estimate is somewhat imprecise, because it is physicians reporting on the number of patients they have seen. As more than one physician might treat the same individual, these figures may substantially overestimate the population seeking treatment.

Table 2-1.—Infertility Services As Part of Practice[a]

(Question 1a):[b] As part of your practice, would you provide infertility services or treatment for infertility?

Base: Cross-sectional sample physicians responding to survey

	Unweighted base[c]		Yes	No
Total	(827)	%	33	67
Specialty				
General practice	(162)	%	7	93
Family practice	(236)	%	13	87
OB/GYN[d]	(196)	%	79	21
Urology	(199)	%	76	22
Other	(34)	%	15	85
Practice				
Office-based	(715)	%	33	67
Hospital-based	(108)	%	31	69
Age				
Under 35	(126)	%	37	63
35 to 49	(344)	%	43	57
50 or older	(342)	%	23	77
Sex				
Male	(759)	%	33	67
Female	(66)	%	36	64

[a] The sample is the cross-sectional sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Obstetrics/gynecology.

SOURCE: Office of Technology Assessment, 1988.

Among the cross-sectional sample physicians who would provide infertility services as part of their practice, most would provide fertility drug therapy (90 percent) and surgical therapy (72 percent), but few would provide in vitro fertilization (3 percent) or gamete intrafallopian transfer (3 percent), and fewer still surrogate mother matching (2 percent) (table 2-4). Artificial insemination falls between these two extremes: 38 percent of physicians treating infertility problems would provide artificial insemination by husband (AIH) and 24 percent, artificial insemination by donor (AID). Of those not offering artificial insemination, nearly half explained that the procedure is not part of their practice (table 2-5). One in 10 cited fear of litigation or liability, and one in 20 cited personal or ethical objections. Other physicians explained that lack of donors (3 percent) and facilities (3 percent) prevented the practice. Nearly one-third of those not accepting patients failed to cite a reason. However, four out of five physicians surveyed in the cross-sectional sample said that they had received no requests for either AIH or AID in the past 12 months, although 52 percent of the obstetrician/gynecologists had (table 2-6). Obstetrician/gynecologists also had larger artificial insemination practices than did other specialties (table 2-7).

Overall, artificial insemination is a common infertility treatment. The survey indicates that **during a 12-month period in 1986-87, approximately 172,000 women underwent at least one cycle of artificial insemination,** 100,000 of them under the supervision of physicians in primary care or obstetrics/gynecology, and the rest under the care of subspecialists. Overall, 9.3 percent of the physicians in primary care or reproductive care specialties have accepted a patient for artificial insemination in the past year, suggesting that

approximately 11,000 physicians in the United States perform—at least occasionally—artificial insemination (tables 2-8, 2-9).

Table 2-2.—Patients Treated for Infertility[a]

(Question 1b):[b] In the past 12 months, approximately how many patients have you treated for infertility problems?
Base: Cross-sectional sample physicians responding to survey who would provide infertility services

	Unweighted base[c]		None	1-10	11-20	21-50	>50	Mean no. of patients
Total	(356)	%	8	36	22	21	12	32.1
Specialty								
General practice	(11)	%	27	73	0	0	0	3.9
Family practice	(31)	%	25	62	10	0	0	9.6
OB/GYN[d]	(155)	%	2	26	27	28	17	42.3
Urology	(154)	%	4	38	25	25	8	26.4
Other	(5)	%	20	20	20	20	20	31.2
Practice								
Office-based	(315)	%	7	37	22	23	11	29.8
Hospital-based	(43)	%	18	32	25	11	18	53.0

[a] The sample is the cross-sectional sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.
[d] Obstetrics/gynecology

SOURCE: Office of Technology Assessment, 1988.

Table 2-3.—Population Estimates of Infertility Treatment[a]

Base: Cross-sectional sample physicians responding to survey
Unweighted base (827)[b]

Specialty	Population size	Proportion treating	Mean patients	Total patients
General practice	25,807	6.8	3.9	6,844
Family practice	43,221	13.2	9.6	54,770
Obstetrics/gynecology	28,511	79.2	42.3	955,164
Urology	8,944	76.5	26.4	180,633
Total				1,197,411

[a] The sample is the cross-sectional sample.
[b] Proportions and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimate can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-4.—Types of Infertility Treatment[a]

(Question 1c):[b] Which of the following types of infertility therapies would you perform as part of your practice?

Base: Cross-sectional sample physicians responding to survey who would provide infertility services

Unweighted base:[g]	Total (356)	GP[c] (11)	FP[d] (31)	OB/GYN[e] (155)	UR[f] (154)
	%[h]	%	%	%	%
Fertility drug therapy	90	73	65	99	86
Surgical therapy	72	20	10	84	94
Artificial insemination by husband	38	27	20	52	10
Artificial insemination by donor	24	20	15	34	4
In vitro fertilization/embryo transfer	3	0	0	4	0
Gamete intrafallopian transfer	3	0	0	4	0
Surrogate mother matching	2	0	2	2	0

[a] The sample is the cross-sectional sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] General practice
[d] Family practice
[e] Obstetrics/gynecology
[f] Urology
[g] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.
[h] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

Table 2-5.—Reasons for Not Accepting Patients for Insemination[a]

(Question 2c):[b] What is the main reason you have not accepted any requests for artificial insemination in the past year? (Verbatim)

Base: Cross-sectional sample physicians responding to survey who received requests but did no inseminations

Unweighted base (71)[c]	Total
	%
Not my specialty/area of expertise	43
Legal risks/fear of litigation	10
Personal objection to artificial insemination	5
Lack of qualified donors	3
Lack of facilities	3
Recipient changed mind	2
Husband did not agree	2
Not medically indicated	2
Risk of HIV (AIDS)	2
All other	6
No reason reported	32

[a] The sample is the cross-sectional sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-6.—Requests for Artificial Insemination[a]

(Question 2a):[b] In the past 12 months, approximately how many requests have you received for artificial insemination, including requests for insemination with either husband or donor sperm?

Base: Cross-sectional sample physicians responding to survey

	Unweighted base[c]		None	1-3	4-10	>11	Mean no. of requests
Total	(827)	%	82	10	5	2	1.6
Specialty							
General practice	(162)	%	99	1	0	0	0
Family practice	(236)	%	92	6	1	<0.5	0.2
Obstetrics/gynecology	(196)	%	48	27	17	8	4.4
Urology	(199)	%	85	7	4	2	5.1
Other	(34)	%	88	3	6	3	0.9
Practice							
Office-based	(715)	%	82	10	5	2	1.5
Hospital-based	(108)	%	87	6	3	4	2.7
Age							
Under 35	(126)	%	80	11	5	1	1.1
35 to 49	(344)	%	75	14	8	3	1.9
50 or older	(342)	%	89	6	3	2	1.5
Sex							
Male	(759)	%	84	9	5	2	1.5
Female	(66)	%	70	20	7	4	2.7

---

[a] The sample is the cross-sectional sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 827 where physicians failed to respond to particular question concerning demographic characteristic.

SOURCE: Office of Technology Assessment, 1988.

Table 2-7.—Patients Accepted for Insemination[a]

(Question 2b):[b] How many patients have you accepted for artificial insemination, with either husband or donor sperm, in the past 12 months?

Base: Cross-sectional sample physicians responding to survey who received requests in last 12 months

	Unweighted base[c]		None	1-3	4-10	>11	Mean no. accepted
Total	(154)	%	43	31	16	8	5.0
Specialty							
General practice	(2)	%	100				
Family practice	(19)	%	72	16	0	4	1.0
Obstetrics/gynecology	(101)	%	32	36	21	11	6.5
Urology	(28)	%	70	20	0	0	1.4
Other	(4)	%	50	25	25	0	2.5
Practice							
Office-based	(136)	%	44	31	17	7	4.0
Hospital-based	(16)	%	42	25	0	33	17.8
Age							
Under 35	(26)	%	46	31	15	4	3.4
35 to 49	(82)	%	43	36	15	8	5.8
50 or older	(43)	%	45	25	18	12	4.6
Sex							
Male	(132)	%	44	30	16	8	4.7
Female	(21)	%	39	39	13	9	6.8

[a] The sample is the cross-sectional sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated

SOURCE: Office of Technology Assessment, 1988

Table 2-8.—Patients Accepted for Artificial Insemination, by Physician Specialty[a]

(Question 2b):[b] How many patients have you accepted for artificial insemination, with either husband or donor sperm, in the past 12 months?

Base: Cross-sectional sample physicians responding to survey

	Unweighted base[c]		None	1-3	4-10	>11
Total	(827)	%	90.1	5.4	2.8	1.4
General practice	(162)	%	100.0	0	0	0
Family practice	(236)	%	98.0	1.3	0	.3
Obstetrics/gynecology	(196)	%	64.8	18.8	10.9	5.4
Urology	(199)	%	95.6	2.9	0	0
Other	(34)	%	94.1	2.9	2.9	0

[a] The sample is the cross-sectional sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated

SOURCE: Office of Technology Assessment, 1988

Table 2-9.—Population Estimate of Number of Physicians Conducting Artificial Insemination[a]

Specialty	Population size	Percentage having accepted a patient for artificial insemination	Estimated number of practitioners offering artificial insemination
General practice	25,807	0	0
Family practice	43,221	1.64	709
Obstetrics/gynecology	28,511	35.15	10,022
Urology	8,944	2.94	263
Total			10,994

[a] The sample is the cross-sectional sample.

SOURCE: Office of Technology Assessment, 1988.

ARTIFICIAL INSEMINATION PRACTITIONERS

The cross-sectional survey found that 41 percent of all physicians who conduct artificial insemination report that they belong to a national fertility society, and nearly all physicians who perform more than 10 inseminations a year (92 percent) belong to such a professional organization. This population of fertility society members treat the majority (75 percent) of the 172,000 recipients of artificial insemination. Furthermore, the incidence of artificial insemination practice among practitioners surveyed in the general cross-sectional sample was too low to generate enough respondents with large artificial insemination practices for useful data. Therefore, a national probability sample of members of a fertility society who are likely to do a great deal of artificial insemination was developed (see app. A).

Table 2-10.—Profiles of the Samples

Unweighted base:[c]	Fertility society sample[a] (646)	Cross-sectional sample[b] (827)
	%	%
Specialty		
General practice	0	27
Family practice	<0.5	37
Obstetrician/gynecologist	80	24
Urology	6	8
Other	14	4
Practice		
Office-based	82	88
Hospital-based	17	11
Age		
Under 35	6	16
35 to 49	57	37
50 or older	36	45
Sex		
Male	92	90
Female	8	9
Currently member of a fertility society		
Yes	94	11
No	6	85

[a] The fertility society sample is drawn from the total membership of the American Society of Andrology and from a subset of the membership of the American Fertility Society who had responded to a previous survey that they do offer artificial insemination services.

[b] The cross-sectional sample is drawn from American Medical Association lists of physicians identifying themselves as in general practice, family practice, obstetrics/gynecology, and urology.

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

In 1985-86, the American Fertility Society (AFS) surveyed its members to identify those who offer artificial insemination, even on an occasional basis, although it did not distinguish between AIH and AID. The AFS members responding that they offer artificial insemination, plus the entire membership list of the American Andrology Society, provided the sampling frame here called the "fertility society sample" (table 2-10). Within this sample, a number of physicians reported that they have accepted four or more women for artificial insemination in the past year. These physicians are referred to as "regularly doing artificial insemination."

Ninety-five percent of the physicians in the fertility society sample report that they provide infertility services as part of their practice and have accepted patients in the last year (table 2-11). The remaining 5 percent tend to be researchers. On average, these physicians treat approximately 168 patients per year for infertility. There is relatively little difference in the average number of infertility patients seen per year by obstetrician/gynecologists (145) and urologists (162). Hospital-based physicians with infertility practices see more patients about infertility problems per year (262) than do office-based physicians (151).

Specialists in reproductive endocrinology and infertility, who constitute the "other" category in table 2-11, however, see about twice as many patients for infertility problems per year (335). These specialists also handle a relatively large proportion of inseminations - on average annually 107 (table 2-12) - and represent nearly 36 percent of the total number of artificial inseminations conducted each year by fertility society members.

Table 2-11.—Patients Treated for Infertility[a]

(Question 1b):[b] In the past 12 months, approximately how many patients have you treated for infertility problems?

Base: Would provide infertility services

	Unweighted base[c]		None	1-10	11-20	21-50	>50	Mean no. treated
Total	(620)	%	5	5	11	26	53	167.7
Specialty								
Obstetrics/gynecology	(520)	%	5	4	11	30	50	144.6
Urology	(31)	%	3	9	21	12	53	161.6
Other	(69)	%	4	7	4	8	73	335.2
Practice								
Office-based	(522)	%	5	4	12	29	50	151.0
Hospital-based	(92)	%	2	8	6	11	71	262.2

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 620 where physicians failed to respond to particular question concerning demographic characteristic

SOURCE: Office of Technology Assessment, 1988.

Table 2-12.—Inseminations During Past Year[a]

(Question 2b):[b] How many patients have you accepted for artificial insemination, with either husband or donor sperm, in the past twelve months?

Base: Have received requests in past twelve months

	Unweighted base[c]		None	1-3	4-10	11-50	>50	Mean no. accepted
Total	(550)	%	11	22	21	31	15	34.0
Specialty								
OB/GYN[d]	(470)	%	9	26	23	30	12	25.2
Urology	(18)	%	63	–	5	32	–	7.9
Other	(62)	%	10	3	10	33	43	106.7
Practice								
Office-based	(463)	%	11	25	22	30	13	30.8
Hospital-based	(16)	%	11	7	14	37	31	52.9

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.
[d] Obstetrics/gynecology.

SOURCE: Office of Technology Assessment, 1988.

FERTILITY SERVICES

The physicians from the fertility society sample who treat infertility problems would normally offer fertility drug therapy (97 percent) and surgical therapy (90 percent) (table 2-13). They differ from the cross-sectional fertility practitioners in that 85 percent have received requests for artificial insemination, and most would offer the service: 85 percent would perform AIH and 62 percent would perform AID. (This is a product of the sample selection, as the sampling frame was based in large part on AFS members who reportedly perform artificial insemination.)

A number of these fertility society members also offer less common forms of infertility treatment, such as in vitro fertilization (19 percent) or gamete intrafallopian transfer (20 percent). These treatments are found more commonly among endocrinologists and those reporting themselves as "infertility specialists" than in the general population of urologists and obstetrician/gynecologists.

Although these forms of infertility treatment are comparatively rare, even among specialists, the survey suggests that **based upon an estimated population of 10,994 members of fertility societies (96 percent of whom provide infertility services or treatment), on the order of 2,111 physicians would perform gamete intrafallopian transfer, 2,005 would perform in vitro fertilization or embryo transfer, and 528 would arrange surrogate mother matches**.

Table 2-13.—Types of Infertility Treatment[a]

(Question 1c):[b]Which of the following types of infertility therapies would you perform as part of your practice?
Base: Would provide infertility services[c]

		Specialty			Sample	
Unweighted base:[d]	Total (620)	Obstetrics/ gynecology (520)	Urology (31)	Other (69)	American fertility society (561)	Andrology society (59)
	%	%	%	%	%	%
Fertility drug therapy	97	98	91	93	98	88
Surgical therapy	90	95	91	55	93	65
Artificial insemination by husband	85	90	24	82	90	47
Artificial insemination by donor	62	65	15	68	66	38
In vitro fertilization/embryo transfer	19	16	3	44	19	17
Gamete intrafallopian transfer	20	18	3	38	20	15
Surrogate mother matching	5	6	0	6	6	2

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Since multiple choices were permitted, percentages may add to more than 100%.
[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

REASONS FOR SEEKING ARTIFICIAL INSEMINATION

Nearly all women who request artificial insemination report to their physicians that they are married (92 percent) or living as a couple with a man (2 percent) (table 2-14). Even practices in which at least 75 percent of the inseminations use donor semen report that 92.5 percent of the women present themselves as married or living with a man.

Requests also come from women identifying themselves as without partners (3 percent) or as part of a lesbian couple (1 percent), which translates into approximately 4,000 requests from single women and 1,000 requests from lesbian couples being received during a 12-month period in 1986-87.

For patients seeking AIH or AID, male partner infertility is the primary reason for the request (table 2-15). Physicians doing mostly AIH as well as those primarily doing AID report that about 8 out of 10 requests for treatment are due to male infertility.

Other problems with the male partner that led to artificial insemination in the past year include: impotence (3 percent); genetic disorders (3 percent); exposure to mutagens (0.4 percent); Rh incompatibility (0.2 percent); and sexually transmitted disease (0.2 percent).

Fewer than 4 percent of the women accepted for artificial insemination in the past year stated that they sought insemination because of the lack of a male partner. Even among physicians whose practice is primarily (75 percent or more) AID, fewer than 5 percent of the women stated that they sought insemination because of the lack of a male partner. None of the physicians reported accepting cases in the past year when patients requested artificial insemination to obtain children with desired characteristics. **Overall, those currently seeking and obtaining artificial insemination, with a few exceptions, identify themselves as married couples with a male reproductive problem, primarily male infertility.**

Table 2-14.—Types of Patients[a]

(Question 4a):[b] What proportion of the patients who have requested artificial insemination in the past year were:

Base: Have accepted 4 or more patients for artificial insemination in the past year

		Proportion AIH[c]			
Unweighted base:[d]	Total (367)	100% (61)	99-75% (70)	74-25% (144)	24-0% (91)
	%	%	%	%	%
Married couples	92.2	97.8	94.1	90.7	90.7
Women without a partner	2.9	0.4	2.3	3.2	4.6
Unmarried couples (heterosexual)	2.2	1.9	2.7	2.2	1.8
Unmarried couples (lesbian)	0.7	0.2	0.8	1.0	0.6
Don't know marital status	0.7	0	0.6	1.2	0.4

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-15.—Reasons for Seeking Insemination[a]

(Question 4b):[b] What proportion of the patients whom you accepted for artificial insemination in the past year sought artificial insemination because of:

Base: Have accepted 4 or more patients for artificial insemination in the past year

		Proportion AIH[c]			
Unweighted base:[d]	Total (367)	100% (61)	99-75% (70)	74-25% (144)	24-0% (91)
	%	%	%	%	%
Infertility of male partner	81.4	78.0	84.1	80.5	83.7
No male partner	3.7	0.1	3.3	4.7	4.9
Impotence of male partner	3.3	3.6	2.6	3.9	2.7
Genetic disorder of male partner	3.1	1.5	1.7	2.9	5.4
Exposure of male partner to mutagens	0.4	0	0.3	0.3	0.8
Rh incompatibility of male partner	0.2	0	0.5	0.1	0.4
Male partner has sexually transmitted disease	0.2	0	0.2	0.3	0.3
Other	6.8	17.2	7.7	5.8	0.9

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988

ARTIFICIAL INSEMINATION BY HUSBAND v. DONOR

Artificial insemination by husband (or partner) currently represents about half of all inseminations being done in the United States, although relatively few practitioners offer only this procedure. Among those regularly doing artificial insemination (i.e., four or more patients per year), 15 percent restricted themselves to AIH. The remaining 85 percent conduct a mixed practice, doing both AIH and AID.

Practitioners who do only AIH tend to have smaller practices. Sixty percent of the physicians who do inseminations only with husbands' or partners' semen have treated 4 to 10 insemination patients in the past year. Nearly all of the remaining 40 percent did 50 or fewer inseminations in the past year.

RECIPIENT SCREENING

General Screening Requirements

Prior to accepting a woman for insemination, **the majority of physicians who regularly provide artificial insemination (i.e., accept four or more patients per year) will screen for indications of infertility (99 percent), obtain a medical history (98 percent), perform a physical examination (96 percent), test for disease that might affect a developing fetus (74 percent), and do a personality assessment (52 percent)**. Forty-four percent will also do some special screening for genetic defects, and 6 percent will do a karyotype (table 2-16).

Personality Assessments

The likelihood of requiring a personality assessment increases with the size of a physician's artificial insemination practice, changing from 48 percent of those seeing 4 to 10 insemination pa-

Table 2-16.—Types of General Screening: Recipient[a]

(Question 5):[b] Prior to accepting a patient for artificial insemination, do you normally require that the patient undergo/provide:
Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Yes	No	Inappropriate response
Fertility history	%	99	1	1
Personal medical history	%	98	1	1
Physical examination	%	96	1	3
Family medical and genetic history	%	93	5	2
Personality assessment	%	52	43	5
Karyotyping	%	6	87	7
Screening for genetic disease (high risk groups)	%	44	53	2
Diagnostic tests for selected diseases	%	74	22	4

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B)
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

tients per year, to approximately 53 percent of those with 11 to 50 insemination patients per year, to 61 percent of those with 100 or more. By contrast, there is relatively little variation by size of practice for most of the other general screening procedures (medical history, family history, fertility history, and physical examination). The survey instrument did not specify the type of personality assessment used. The nature of the "personality assessments" may vary from an interview and individual physician assessment to use of standardized psychological examinations. Further, the assessments could be used to detect diagnosable mental illness or to address more general considerations of fitness for pregnancy and motherhood (Mikesell, 1988).

Physicians with office-based practices are roughly as likely as those with hospital-based practices to require such an assessment (table 2-17). Personality assessments are somewhat less common, although still widely used, among physicians who perform only AIH (38 percent) compared with those performing mainly AID (54-59 percent). **Young physicians (29 percent) and female physicians (39 percent) are less likely than older (60 percent) and male physicians (53 percent) to require personality assessment prior to acceptance** (table 2-17). However, the sample size of physicians who are female or

Table 2-17.—Recipient Personality Assessment, by Physician Characteristics[a]

(Question 5):[b] Prior to accepting a patient for artificial insemination, do you normally require that the patient undergo/provide:
Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Not applicable
Total	(367)	%	52	43	5
Age					
Under 35	(21)	%	29	71	0
35 to 49	(221)	%	51	46	3
50 or over	(121)	%	60	32	8
Sex					
Male	(339)	%	53	42	5
Female	(28)	%	39	54	7
Practice					
Office	(296)	%	53	41	6
Hospital	(66)	%	51	48	–
Proportion AIH[d]					
100%	(61)	%	38	50	13
75-99%	(70)	%	55	44	3
25-74%	(144)	%	54	44	2
0-24%	(91)	%	59	38	4

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.
[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

under 35 on which this figure is based is quite low.

Genetic Screening

Twenty-eight percent of the physicians regularly doing artificial insemination indicate that a family history of genetic disease would lead them to require genetic screening of a potential insemination recipient, and 7 percent would require screening of a patient whose reproductive history was consistent with an underlying genetic problem. As noted, 6 percent required karyotyping prior to accepting a recipient. Hence, genetic testing is far from routine for insemination patients, even those in higher than average risk groups (table 2-18).

Special screening for genetic diseases is more common among hospital-based practitioners (53 percent) than among office-based ones (42 percent), and the likelihood increases with the size of the practice, from 34 percent of those with 4 to 10 patients per year to 63 percent of those seeing more than 50 a year. Few tests are available for genetic screening at this time, and special screening beyond oral family histories may be largely restricted to karyotyping for chromosomal defects and testing for a select group of disorders such as Tay-Sachs disease, sickle cell anemia, thalassemia, and so on.

Table 2-18.—Circumstances Requiring Genetic Screening: Recipient[a]

(Question 6b):[b] Under what circumstances do you require special screening for genetic defects or diseases? (verbatim)

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base:[c]	All physicians doing inseminations (367)	Physicians doing some screening (162)
	%[d]	%
Family history of genetic diseases or defects	28	63
Membership in high risk ethnic group	13	29
Personal medical history (no reference to fertility)	9	20
Fertility history/reproductive problems (menstrual problems/spontaneous abortions/stillbirths)	7	17
Infectious diseases	3	8
Age	1	3
Other	2	6

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

Physicians who do AIH only are less likely (32 percent) than are those who also do AID (46-48 percent) to screen recipients for genetic diseases, although there is no difference in the risk of genetic disease. As with personality assessments, younger doctors (43 percent) are less likely than older ones (52 percent) to use genetic screening, and female physicians (39 percent) less likely than male physicians (45 percent), although the differences are not as striking.

Other Diagnostic Tests

A majority of physicians regularly doing artificial insemination (74 percent) require other diagnostic tests of recipients prior to accepting them for insemination, with hospital-based physicians again more likely (80 percent) than office-based physicians (73 percent) to require tests. The likelihood also increases with the size of the physician's artificial insemination practice, from 69 percent for those accepting 4 to 10 patients per year to 76 to 78 percent for those accepting more than 10. There is no real difference in the use of diagnostic tests between physicians doing AID (70 percent) and those exclusively doing AIH (72 percent) (table 2-19).

The diagnostic screening most often required by physicians doing artificial insemination is that for infertility (47 percent), by taking a fertility history or doing one of the many tests required for an infertility workup (U.S. Congress, 1988). The most commonly reported tests for infectious diseases were those for human immunodeficiency virus (HIV) antibodies (10 percent), chlamydia (9 percent), rubella (9 percent), gonorrhea (7 percent), syphilis (6 percent), hepatitis (4 percent), cytomegalovirus (3 percent), and herpes (1 percent) (table 2-21). In addition, 5 percent of physicians who conduct artificial insemination report testing for unspecified sexually transmitted diseases and 1 percent for other infectious diseases.

Table 2-19.—Diagnostic Tests: Recipients[a]

(Question 6c):[b] Do you require any other diagnostic tests of potential recipients, prior to accepting them for artificial insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Not applicable
Total	(367)	%	74	22	4
AI patients/past year					
4-10	(115)	%	69	27	4
11-50	(169)	%	76	22	2
51-100	(47)	%	78	15	9
>100	(36)	%	78	14	8
Proportion AIH[d]					
100%	(61)	%	72	28	2
75-99%	(70)	%	77	22	2
25-74%	(144)	%	77	18	5
0-24%	(91)	%	70	23	7
Practice					
Office	(296)	%	73	23	4
Hospital . . .	(66)	%	80	17	3

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Correlation of Past Patient Rejection With Patient Characteristics

Four out of five patients who request artificial insemination are accepted. The remaining 20 percent are rejected for a variety of medical and nonmedical reasons (table 2-20). **The most common reason that requests have been rejected are that the patient is unsuitable for nonmedical reasons: she is unmarried (52 percent), psychologically immature (22 percent), homosexual (15 percent), or welfare-dependent (15 percent)** (table 2-22). Other reasons include evidence of child abuse (13 percent), drug abuse (11 percent), or alcohol abuse (10 percent). About 1 in 20 practitioners report rejecting applicants because of a prior criminal record. These rates are similar for physicians doing AIH only and those doing mostly AID.

Table 2-20.—Reasons for Rejecting Recipients[a]

(Question 3b):[b] Could you describe the main reason(s) that you did not accept certain requests for artificial insemination? (verbatim)

Base: Accepted 4 or more patients for artificial insemination in the past year and rejected a request for artificial insemination

	Total	Number of recipients rejected	
		1-4	>5
Unweighted base:[c]	(199)	(68)	(131)
	%[d]	%	%
Inappropriate recipient (NET)	42	49	38
Too old/over 40	5	4	5
Single	20	21	20
Unmarried	13	16	12
Lesbian/homosexual	7	9	6
Emotionally unstable	5	8	3
Inappropriate unspec.	4	3	5
Not medically indicated (NET)	31	16	38
No male factor problem	3	2	4
Femal factor problem	6	3	8
Male sperm too poor for AIH[d] . . .	8	3	10
Not indicated (unspec.)	16	9	19
Will only do AIH[d]	16	16	15
Inappropriate couple (NET)	10	10	9
Unstable marriage	5	6	5
Financial/economic	2	2	2
Not suitable parents	2	2	2
Not ready	1	2	1
Lack of qualified donors	7	9	6
Inappropriate donor (NET)	7	3	8
Too closely related	4	3	4
Semen not suitable	1	0	2
Donor emotionally unstable	1	0	2
Other donor characteristics	2	0	4
Medical risks (NET)	6	4	7
Risk of HIV infection	4	3	5
Risk of venereal disease	2	2	2
Medical risks (unspec.)	1	2	1
Inadequate recipient understand. .	5	10	2
Recipient changed mind	3	2	4
Husband did not agree	2	0	4
Recipient refused counseling	2	3	2
Lack of facilities	2	2	2
Not area of expertise	1	3	0
Personal objection to artificial insemination	1	3	0
Fear of litigation	>0.5	0	1
Other	4	2	5
Not reported	7	4	8

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

Nearly one-third of physicians who have rejected a request gave a medical justification: female infertility (6 percent), husband/partner

Table 2-21.—Types of Diagnostic Tests: Recipients[a]

(Questions 6d, 6e):[b] Which diagnostic tests do you require? (verbatim)
Base: Have accepted 4 or more patients for artificial insemination in the past year

	All physicians doing inseminations		Physicians doing diagnostic testing	
Unweighted base:[c]	In all cases (367)	In some cases (367)	In all cases (271)	In some cases (271)
	%[d]	%	%	%
Infertility tests (NET)	47	38	63	52
Blood type/rh factor	17	3	23	4
AIDS (HIV) testing	10	4	13	6
Urethral culture for chlamydia	9	2	12	3
Rubella antibody	9	<0.5	12	<0.5
GC culture	7	2	10	3
Syphilis testing (VDRL/RPR)	6	1	8	1
Pap smear	6	<0.5	8	<0.5
Sexually transmitted diseases	5	1	7	2
Routine blood screen analysis	5	1	7	2
Hepatitis serum	4	1	6	2
NGU/Ureaplasma/Mycoplasma test	4	1	5	2
Cytomegalovirus	3	1	4	1
Physical exam and history	2	1	3	2
Semen mucus interaction	2	3	3	4
Herpes culture	1	1	2	1
Urinalysis	1	0	1	0
Thyroid panel	1	1	1	2
Other infectious disease	1	1	1	1
Karyotyping	1	2	1	3
Inheritable disease	1	2	1	3
Genetic screening	0	1	0	2
Inappropriate response	13	4	18	6
No answer	6	22	8	30

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

semen too poor for AIH (8 percent), or in general finding that the procedure was not medically indicated (16 percent).

Physicians have also rejected potential recipients because they evidenced HIV antibodies (7 percent), syphilis (6 percent), gonorrhea (4 percent), genital herpes (3 percent), cytomegalovirus (2 percent), hepatitis (2 percent), and chlamydia (1 percent). Ten percent have rejected patients because of histories of serious genetic disorders. Eight percent have done so because of medical risks from pregnancy, and 9 percent because the applicant was over 40.

Correlation of Likelihood of Rejection With Patient Characteristics

The incidence of past rejection of patients with certain types of characteristics may be misleading because some physicians may never have had contact with a potential recipient with such characteristics. Therefore, the physicians were asked for which recipient characteristics they "had rejected" or "would be likely to reject" a request for artificial insemination (table 2-22).

Fewer than half the physicians regularly doing artificial insemination have rejected or would be likely to reject a patient despite evidence of an

Table 2-22.—Criteria for Rejection: Recipients[a]

(Question 7):[b] Have you ever rejected or would you be likely to reject a request for artificial insemination from a potential recipient because she was/has:

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Have rejected	Would be likely to reject	Not likely to reject	Not applicable
Unmarried without a partner	%	32	29	37	2
Psychologically immature	%	22	63	12	3
Unmarried with a partner	%	20	29	49	2
Homosexual	%	15	48	33	4
Welfare dependent	%	15	39	41	5
Evidence of child abuse	%	13	82	3	2
Evidence of drug abuse	%	11	79	8	2
Evidence of alcohol abuse	%	10	79	9	2
History of serious genetic disorders	%	10	69	17	5
Over 40 years old	%	9	26	62	3
Medical risks from pregnancy	%	8	46	41	5
HIV (HTLV) positive	%	7	88	2	2
Syphilis	%	6	46	44	4
Less than 18 years old	%	6	64	27	3
Gonorrhea	%	4	34	59	3
Criminal record	%	4	49	40	7
Genital herpes	%	3	15	78	3
Less than average intelligence	%	3	29	62	6
Hepatitis	%	2	36	58	4
Cytomegalovirus	%	2	28	65	5
Chlamydia	%	1	16	78	4
Less than high school degree	%	1	8	87	4
Other living children	%	<0.5	3	94	2
Prior miscarriage	%	<0.5	3	94	3

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

infectious disease, including genital herpes (18 percent), chlamydia (17 percent), cytomegalovirus (30 percent), gonorrhea (38 percent), or hepatitis (38 percent). Fifty-two percent have rejected or would be likely to reject a patient with syphilis. It should be noted that the physicians responding to this question frequently qualified their answers on the basis of the state of the disease.

Physicians were evenly divided on whether they would (49 percent) or would not (49 percent) be likely to reject an unmarried recipient with a partner. If the unmarried recipient does not have a partner, the proportion of physicians who have rejected or would be likely to reject the patient rises to 61 percent. If the patient is homosexual, presumably in addition to being unmarried and without a male partner, the number increases to 63 percent of the surveyed fertility society physicians regularly doing artificial insemination.

Other recipients whom more than half the physicians have rejected or would be likely to reject include those with a criminal record (53 percent) or welfare dependence (54 percent). Those with AIH-only practices stated less frequently (52 percent) than those with predominantly AID practices (30 percent) that they have or likely would reject a recipient with a criminal record. Sperm banks report rarely, if ever, rejecting a man who requests semen storage for future AIH use, despite a history of these characteristics (see ch. 3).

Seventy-nine percent of the physicians are likely to reject or have already rejected a recipient because she has a history of serious genetic disorders that might affect the resulting child. In contrast, 54 percent have rejected or would be likely to reject an applicant because of medical risks to herself associated with being pregnant.

Most of those who conduct artificial insemination on a regular basis have already rejected or would be likely to reject a patient who is a minor (70 percent), psychologically immature (85 percent), or evidenced alcohol abuse (89 percent), drug abuse (90 percent), child abuse (95 percent), or HIV antibodies (95 percent).

The age and sex of the physician are correlated with some aspects of recipient rejection (table 2-23). For example, physicians over age 50 are more likely than those under age 35 to have rejected or to state they would reject an unmarried, homosexual, or welfare-dependent recipient. They are also more likely to reject a recipient with a sexually transmitted disease, a history of serious genetic disorders, a criminal record, or infection with HIV. **In general, physicians over the age of 50 are more likely than those under the age of 35 to have rejected or state they would reject an applicant for artificial insemination, whether on medical or nonmedical grounds.** This does not appear to be an artifact of the physician population, in which there are relatively more young physicians who are female and older physicians who are male, as with the exception of recipient homosexuality and infection with certain sexually transmitted diseases, **male physicians are less likely than female physicians to have re-**

Table 2-23.—Acceptability of Recipient Characteristics, by Age and Sex of Physicians [a]

(Question 7):[b] Have you ever rejected or would you be likely to reject a request for artificial insemination from a potential recipient because she was/has:

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Not likely to reject				
	Age			Sex	
Unweighted base:[c]	Under 35 (21)	35 to 49 (221)	>50 (121)	Male (339)	Female (28)
	%	%	%	%	%
Less than 18 years old	19	30	22	28	14
Welfare dependent	57	41	38	42	29
Psychologically immature	19	14	8	12	14
Unmarried with a partner	71	51	41	50	32
Unmarried without a partner	43	36	35	38	21
Less than high school degree	100	88	83	87	86
Less than average intelligence	81	69	48	62	64
Criminal record	52	41	37	41	25
Homosexual	52	33	30	32	39
Other living children	100	94	93	94	93
Evidence of alcohol abuse	0	10	7	9	7
Evidence of child abuse	5	3	2	3	0
Over 40 years old	71	68	50	61	75
Prior miscarriage	100	95	92	94	100
Medical risks from pregnancy	52	44	36	42	39
History of serious genetic disorders	33	16	15	16	25
Syphilis	62	46	39	42	71
Gonorrhea	71	59	59	58	75
Genital herpes	90	78	77	78	79
Cytomegalovirus	71	66	62	64	71
Chlamydia	86	76	80	77	86
Hepatitis	67	56	58	57	61
HIV (HTLV) positive	5	3	2	3	0

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] Items are in order as they appeared on survey instrument.

SOURCE: Office of Technology Assessment, 1988.

jected or state they would reject applicants for artificial insemination, either on medical or nonmedical grounds. This finding must be qualified, however, by noting that there were only 28 practitioners in the sample of female physicians regularly doing artificial insemination (i.e., four or more insemination patients per year).

PRESENTATION OF RISKS AND OPTIONS

Four out of five physicians (82 percent) routinely present other options to patients seeking artificial insemination, even though some patients may have come specifically seeking artificial insemination after having considered other options presented by previous physicians. The alternative most often brought up is adoption (54 percent) (table 2-24). A fourth of artificial insemination practitioners normally present the option of in vitro fertilization (26 percent). A smaller proportion discuss gamete intrafallopian transfer (11 percent), embryo transfer (2 percent), and surrogate motherhood (less than 1 percent). Other options presented include further testing for male infertility (11 percent), other forms of correction of male infertility (7 percent), and remaining childless (2 percent).

Options presented by physicians whose practices use only husband or partner semen differ from those presented by physicians also offering AID (table 2-24). Adoption is presented routinely in 43 percent of the AIH-only practices, compared with 57 percent of the predominantly AID practices. By contrast, in vitro fertilization is routinely presented in 34 percent of the AIH-only practices, compared with 23 percent of the predominantly AID practices. The option of

Table 2-24.—Alternatives to Insemination[a]

(Question 16):[b] Which other options do you normally present? (verbatim)

Base: Have accepted 4 or more patients for artificial insemination in the past year

		Proportion AIH[c]			
Unweighted base:[d]	Total (367)	100% (61)	99-75% (70)	74-25% (144)	24-0% (91)
	%[e]	%	%	%	%
Adoption	54	43	51	59	57
In vitro fertilization	26	34	29	25	23
Further testing for male infertility	11	7	9	14	12
Gamete intrafallopian transfer	11	22	13	11	3
Other correction for male infertility	7	7	4	6	9
Intrauterine insemination	3	2	3	4	4
Artificial insemination by donor	3	5	6	2	1
Artificial insemination by husand	3	0	4	5	1
Further testing (unspec.)	3	7	3	2	3
Remain childless	2	0	2	2	4
Embryo transfer	2	0	2	2	1
Self insemination	1	0	4	0	1
Further testing for female infertility	1	2	2	1	1
Surrogate motherhood	<0.5	0	0	1	0
All other	5	7	6	6	3
It depends	4	2	9	3	4
Not sure	3	0	3	5	2

[a] The sample is the fertility society sample

[b] The code number of the question in the survey instrument (see app. B).

[c] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used

[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[e] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988

Table 2-25.—Presentation of Risks[a]

(Question 17a):[b] Do you routinely present possible risks of artificial insemination to patients who request artificial insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Not applicable
Total	(367)	%	85		11
Insemination patients/past year					
4-10	(115)	%	81	14	1
11-50	(169)	%	84	11	4
51-100	(47)	%	96	6	0
>100	(36)	%	94	6	0
Proportion AIH[d]					
100%	(61)	%	62	27	2
75-99%	(70)	%	90	4	4
25-74%	(144)	%	92	8	1
0-24%	(91)	%	87	11	2
Practice					
Office	(296)	%	86	11	1
Hospital	(66)	%	85	11	3
Age					
Under 35	(21)	%	95	5	0
35 to 49	(221)	%	88	9	2
50 or over	(121)	%	79	15	2

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988

gamete intrafallopian transfer follows a similar pattern. AID is presented as a treatment option in few of the AIH-only practices (5 percent).

Eighty-five percent of physicians regularly doing artificial insemination routinely present its possible risks (table 2-25) – most commonly infection and normal risks of birth defects, although the likelihood of presenting risks declines with the physician's age, from 95 percent of those under 35 to 79 percent of those 50 or older. Likelihood of presenting risks is also affected by the size of practice, increasing from 81 percent among practitioners with 4 to 10 patients per year to 94 to 96 percent among practitioners with more than 50 patients per year. Those doing AIH only are considerably less likely (62 percent) than those who also do AID (87-92 percent) to disclose risks.

Forty-five percent of the physicians mention the normal risks of birth defects, 40 percent mention infectious diseases, and 26 percent specifically mention sexually transmitted diseases when discussing risks. Eight percent routinely mention the risk of HIV transmission (table 2-26). Risks discussed also include other normal risks of pregnancy (13 percent), as well as specific risks of miscarriage (12 percent) and ectopic pregnancy (4 percent). Multiple pregnancies are presented as a risk by a few practitioners (2 percent). Far more, however, present the failure to conceive (17 percent) as a possible outcome. A relatively

Table 2-26.—Risks of Insemination[a]

(Question 17b):[b] Which risks do you normally present? (verbatim)

Base: Have accepted 4 or more patients for artificial insemination in the past year

		Proportion AIH[c]			
Unweighted base:[d]	Total (367)	100% (61)	99-75% (70)	74-25% (144)	24-0% (91)
	%[e]	%	%	%	%
Birth defects	45	12	54	53	51
Infection	40	36	40	34	41
Sexually transmitted disease	26	15	28	31	28
Failure to conceive	17	16	22	14	17
Normal risks of pregnancy	13	8	12	14	12
Miscarriage	12	5	10	15	15
HIV transmission	8	2	10	11	7
Ectopic pregnancy	4	5	6	4	4
Psychological (recipient)	3	0	5	4	7
Legal complications	3	2	2	4	3
Allergic reactions	3	3	6	0	3
Cramps/spasms	2	2	2	2	3
Hepatitis	2	0	2	4	0
Multiple pregnancies	2	2	0	2	3
Cost	2	0	5	1	1
Psychological (husband)	1	0	2	0	3
Psychological (child)	1	0	0	2	1
Bleeding	1	0	3	1	0
Other	10	8	7	5	11
None reported	3	5	3	5	3

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[e] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988

small proportion of practitioners present psychological complications for the recipient (3 percent), the husband (1 percent), or the offspring (1 percent) as part of the risks normally discussed, and then only in practices doing artificial insemination by donor.

DONOR SELECTION AND SCREENING

Sources of Donor Semen

Forty-five percent of artificial inseminations conducted in the preceding year used donor semen; 22 percent of all artificial inseminations used donor semen from sperm banks and 21 percent used physician-selected donors. AIH, using husband or partner semen donors, accounted for almost all the remaining inseminations (54 percent), as AID using semen from recipient-selected donors represented only 1 percent of all artificial inseminations in the preceding year and other sources (such as the physician himself) were reportedly even less common (table 2-27).

General Screening Requirements

Since relatively few physicians who accept four or more insemination patients a year are engaged exclusively in either AIH (16 percent) or AID (7 percent), practitioners were asked which screening procedures they normally required from donors selected by the recipient (such as husbands and partners), which they required from other donors, and which they required from neither.

Physicians doing artificial insemination by donor appear to require far less screening for a donor selected by a recipient than they do for the recipient herself. Ninety-eight percent of the practitioners who regularly provide artificial insemination will require a personal medical history of a potential recipient, compared with 43 percent who require it of a recipient-selected donor (table 2-28). Similarly, fertility screening, family medical and genetic history, and personality assessments are less frequently required for recipient-selected donors than they are for the recipients themselves. Karyotyping, on the other hand, is more frequently done for these donors than for the recipients.

Genetic Screening

Approximately half of all physicians engaged in artificial insemination on a regular basis require special screening for genetic defects or diseases from some donors prior to accepting them (table 2-29). Even though available biochemical

Table 2-27.—Sources of Sperm[a]

(Question 4d):[b] In what proportion of artificial insemination was the sperm from:

Base: Have accepted 4 or more patients for artificial insemination in the past year

		Proportion AIH [c]			
Unweighted base:[d]	Total (367)	100% (61)	75-99% (70)	25-74% (144)	0-24% (91)
Mean proportion from:					
Husband/partner	54.0	100.0	84.0	48.9	8.8
Sperm bank	22.3	0	9.3	23.5	45.5
Donor selected by you (physician)	21.3	0	6.7	25.8	39.8
Donor provided by recipient	1.0	0	0.5	1.0	1.9
Other[e]	0.4	0	0	0.8	0.5

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[d] Means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[e] Includes from physician himself, from donor supplied by another source other than a sperm bank, or other unspecified sources.

SOURCE: Office of Technology Assessment, 1988.

Table 2-28.—General Screening: Donors [a]

(Question 35):[b] Prior to acceptance as a donor, which of the following do you normally require from donors selected by the recipient (e.g., husbands, partners), which do you require from other donors, and which do you require from neither?

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367) [c]		Recipient-selected donor	Only other donors	Don't require	Done by sperm bank	Practice only artificial insemination by husband
Personal medical history	%	43	57	4	9	11
Family medical and genetic history	%	42	58	4	9	11
Fertility history	%	43	55	4	9	11
Physical examination	%	25	42	20	9	11
Personality assessment	%	18	34	29	9	11
Karyotyping	%	4	13	48	9	11

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-29.—Genetic Screening: Donors [a]

(Question 36a):[b] Do you ever require special screening for genetic defects or diseases from any donors, prior to accepting them for artificial insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base [c]		Yes	No	Practice only artificial insemination by husband	Sperm bank only	Not applicable
Total	(367)	%	48	33	10	7	2
Insemination patients/past year							
4-10	(115)	%	32	41	20	7	2
11-50	(169)	%	47	34	8	10	2
51-100	(47)	%	76	17	2	6	0
>100	(36)	%	78	22	0	0	0
Proportion AIH [d]							
100%	(61)	%	20	22	55	0	3
75-99%	(70)	%	64	29	3	4	1
25-74%	(144)	%	54	36	0	10	1
0-24%	(91)	%	49	39	0	11	2
Practice							
Office	(296)	%	47	34	11	8	2
Hospital	(66)	%	59	30	6	4	0

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.
[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

tests for screening are few, such donor screening becomes more likely with increased practice size, rising from 32 percent of those with 4 to 10 patients per year to 76 to 78 percent among those with more than 50 patients a year. Hospital-based physicians are somewhat more likely (59 percent) than office-based physicians (47 percent) to sometimes require special genetic screening of donors.

Twenty percent of the physicians regularly doing artificial insemination indicate that a family history of genetic disease would lead them to require genetic screening of a potential donor (table 2-30). Eighteen percent would require it of a potential donor from an ethnic group at high risk to a genetic disease. Hence, genetic testing is not routine for donors, including those in higher than average risk groups.

Table 2-30.—Circumstances Requiring Genetic Screening: Donors[a]

(Question 36b):[b] Under what circumstances do you require special screening of donors for genetic defects or diseases? (verbatim)

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base[c]	Physicians doing some screening (177)	All physicians doing inseminations (367)
	%[d]	%
Family history of genetic diseases or defects	42	20
Membership in high-risk ethnic group	38	18
Personal medical history (no reference to fertility)	9	4
Fertility history/reproductive problems	4	2
Infectious diseases	9	4
Age	0	0
Other	5	2
Require for everyone	5	2
Sperm bank does screening	7	4
Not reported	4	2

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

Other Diagnostic Tests

Fifty-six percent of physicians regularly providing artificial insemination require other diagnostic tests of donors prior to accepting them for insemination (table 2-31). Once again, hospital-based practitioners are more likely (76 percent) than are office-based practitioners (52 percent) to require diagnostic tests of donors. Similarly, the requirement of diagnostic tests of donors increases directly with practice size, from 30 percent of those with 4 to 10 patients per year to 97 percent of those with 100 or more patients per year.

For those doing both AIH and AID, the rate of diagnostic testing of donors varies from 62 percent to 68 percent. As another 10 to 11 percent of these practitioners report that all testing is done by a sperm bank, rather than themselves, the rate of diagnostic testing may be as high as 79 percent among these practices.

Physicians most commonly test for infectious diseases (table 2-32). Forty-four percent do tests for evidence of HIV infection, 28 percent for syphilis, 27 percent for gonorrhea, 26 percent for hepatitis, 23 percent for chlamydia, 12 percent for cytomegalovirus, 6 percent for herpes, and 11 percent for unspecified sexually transmitted diseases.

Fertility Screening

Seventy-two percent of the fertility society physicians predominantly doing artificial insemination by donor on a regular basis will screen donor semen for probable fertility (table 2-33), **and an additional 10 percent obtain their semen samples from sperm banks, where such screening is routine.** Sixteen percent of those predominantly doing AID, however, do not require such screening. For those doing fertility screening, over 90 percent use sperm count, motility, and morphology as criteria. A majority also examine semen for white blood cell count (76 percent) and viscosity (59 percent), and, if using frozen semen, for post-thaw motility (52 percent). Fertility testing increases with the size of practice, from 51 percent of those with 4 to 10 patients to 94 percent of those with more than 100 patients.

Correlation of Past Donor Rejection With Donor Characteristics

Among the 24 characteristics examined by the survey, a history of serious genetic disorders was the condition for which the greatest proportion of practitioners (21 percent) had rejected a donor (table 2-34). Practitioners also have rejected do-

Table 2-31.—Diagnostic Tests: Donors[a]

(Question 36c):[b] Do you ever require any other diagnostic tests for donors prior to initial acceptance, not counting analysis of sperm?
Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Practice only artificial insemination by husband	Sperm bank only	Not applicable
Total	(367)	%	56	24	10	8	2
Insemination patients/past year							
4-10	(115)	%	30	42	19	8	3
11-50	(169)	%	60	18	9	11	2
51-100	(47)	%	76	15	2	9	0
>100	(36)	%	97	3	0	0	0
Proportion AIH[d]							
100%	(61)	%	8	35	57	0	2
75-99%	(70)	%	65	20	4	10	1
25-74%	(144)	%	68	21	0	11	1
0-24%	(91)	%	62	26	0	10	3
Practice							
Office	(296)	%	52	26	12	9	2
Hospital	(66)	%	76	14	4	6	1

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

nors with evidence of being seropositive to HIV antibodies (13 percent), or having hepatitis (13 percent), genital herpes (13 percent), syphilis (12 percent), gonorrhea (11 percent), chlamydia (11 percent), and cytomegalovirus (10 percent). Rejections for reasons other than overt genetic or infectious disease were most commonly related to the risk of undetected HIV infection. Physicians have rejected donors due to homosexual contacts (16 percent), intravenous drug use (13 percent), multiple heterosexual partners (12 percent), sexual contacts with HIV-infected persons ("AIDS cases") (10 percent), and residence in areas with a high incidence of HIV infection (6 percent).

Physicians also reported rejecting donors due to drug abuse (14 percent), psychological immaturity (13 percent), alcohol abuse (11 percent), a criminal record (9 percent), less than average intelligence (8 percent), child abuse (6 percent), less than a high school education (6 percent), and less than average height (3 percent).

Correlation of Likelihood of Rejection With Donor Characteristics

As with potential recipients, physicians may have never rejected certain types of donors because they have not encountered someone with these particular characteristics. Therefore, they were asked if they "have ever rejected" or "would be likely to reject" donors with particular traits. Eight percent replied that they obtained semen only from sperm banks, and a further 10 percent answered that they did AIH only, implying that they did no screening (table 2-34).

Beyond this 18 percent who apparently do not screen, a minority of practitioners regularly doing artificial insemination have rejected or would reject a donor of less than average height (16 percent) or less than high school education (39 percent).

The donor characteristic that generates the most widespread concern among practitioners is exposure or risk of exposure to HIV. Eighty percent of the practitioners have rejected or would

Table 2-32.—Types of Diagnostic Tests: Donors[a]

(Question 36d,e):[b] Which diagnostic tests do you require: (verbatim)

Base: Have accepted 4 or more patients for artificial insemination in the past year

	All physicians doing inseminations		Physicians doing diagnostic tests	
	In all cases	In some cases	In all cases	In some cases
Unweighted base:[c]	(367)	(367)	(205)	(205)
	%[d]	%	%	%
HIV testing	44	1	78	2
Syphilis testing (VDRL/RPR)	28	1	50	1
GC culture (gonorrhea)	27	2	49	3
Hepatitis serum	26	2	47	3
Urethral culture for chlamydia	23	2	41	3
Blood type/rh factor	20	1	36	2
Cytomegalovirus	12	1	21	1
Sexually transmitted diseases (not specified)	11	1	19	2
Herpes culture	6	2	10	3
Routine blood screen analysis	4	1	8	1
NGU/ureaplasma/mycoplasma test (nongonococcal urethritis)	4	1	8	2
Semen analysis (unspec.)	4	0	7	0
Infertility tests (NET)	6	2	11	3
Other infectious disease	3	1	5	2
Karyotyping	2	3	3	6
Urinalysis	2	<0.5	3	<0.5
Rubella antibody	1	0	2	0
Physical exam and history	1	<0.5	2	<0.5
Semen mucous interaction	1	1	2	2
Inheritable disease	1	6	2	11
Genetic screening	1	2	1	4
Blood count with differentiation	1	0	1	0
Thyroid panel	<0.5	1	<0.5	2
Other inappropriate response	1	0	1	0
Other	3	<0.5	5	<0.5
No answer	1	36	2	65

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

be likely to reject a donor who is seropositive for HIV antibodies. Similarly, they would reject or already have rejected an intravenous drug user (81 percent), someone who has had sexual contact with an HIV-infected person (79 percent), someone who has had homosexual contacts (78 percent) or multiple heterosexual partners (65 percent), or someone who resides in an area with a relatively high rate of HIV infection (54 percent). (Again, a further 18 percent in all these cases replied that they did AIH only, or exclusively used semen from sperm banks.)

Infectious diseases also caused concern for most physicians, as most have rejected or would reject donors with genital herpes (67 percent), cytomegalovirus (68 percent), gonorrhea (69 percent), syphilis (73 percent), or hepatitis (75 percent). **They also reported that they would reject or have rejected donors with a criminal record (65 percent) or a history of child abuse (74 percent), alcohol abuse (77 percent), or drug abuse (79 percent).**

Inherited Conditions and Donor Screening

A donor with a history of serious genetic disorders would be accepted by only 1 percent of the surveyed physicians. To determine which heritable characteristics would disqualify a donor, the

Table 2-33.—Fertility Screening: Donors [a]

(Question 37):[b] Do you normally require screening of the semen of donors for fertility or not?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Require	Don't require	Practice only artificial insemination by husband	Sperm bank	Not applicable
Total	(367)	%	66	12	10	10	2
Insemination patients/past year							
4-10	(115)	%	51	20	18	9	4
11-50	(169)	%	66	10	10	13	2
51-100	(47)	%	78	11	2	11	–
>100	(36)	%	94	3	0	0	3
Proportion AIH[d]							
100%	(61)	%	28	12	58	2	2
75-99%	(70)	%	74	12	3	12	1
25-74%	(144)	%	74	11	0	13	3
0-24%	(91)	%	72	16	0	10	3
Practice							
Office	(296)	%	64	12	11	10	2
Hospital	(66)	%	76	9	6	8	2

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

survey asked physicians to report whether they would accept a donor with a particular disorder, reject a donor who has it, or reject a donor whose family history includes someone with the disorder. In general, the survey found that physicians are reluctant to accept donors with so much as a family history of genetic disorders, even those whose genetic transmission patterns are poorly understood or that pose no danger if the recipient is not a carrier of the disorder. **In a number of cases, a majority of physicians would reject healthy donors with family histories of x-linked disorders that are not transmissible unless the donor himself has the condition, for example, hemophilia (49 percent) or Duchenne's muscular dystrophy (61 percent)** (table 2-35).

Physicians also frequently screen out healthy donors with family histories of Tay-Sachs disease (50 percent), sickle cell anemia (46 percent), or thalassemia (47 percent). These are autosomal recessive disorders—i.e., a healthy donor may carry the trait and pass it on to his children, who will suffer from the disease if they inherit the same gene from their mother as well. The donor himself will not suffer from the disease because although he has one chromosome with the disease gene, his matching chromosome has the normal gene. Carrier status for these particular disorders can be identified with laboratory tests, and physicians could choose to run such tests on potential donors rather than screen men out of the pool entirely on the basis of a family history. In the alternative, physicians could screen recipients and donors to assure that those with family histories of these disorders are not matched to one another.

Some autosomal recessive disorders, such as cystic fibrosis, have no reliable carrier test, and the 33 percent of physicians who do not reject a donor with a family history of this most common of genetic disorders among American caucasian children may be failing to screen out some donors who are carriers.

Some of the conditions that lead the majority of physicians to reject apparently healthy donors are autosomal dominant disorders, i.e., having

Table 2-34.—Criteria for Rejection: Donors[a]

(Question 40):[b] Have you ever rejected or would you be likely to reject a donor because he was/has:
Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Have rejected	Would reject	Would not reject	Practice only artificial insemination by husband	Semen bank only
History of serious genetic disorders	%	21	59	1	10	8
Homosexual contacts	%	16	62	3	10	8
Evidence of drug abuse	%	14	65	2	10	8
Psychologically immature	%	13	46	22	10	8
Genital herpes	%	13	54	14	10	8
Hepatitis	%	13	62	6	10	8
HIV (HTLV) positive	%	13	67	1	10	8
Intravenous drug user	%	13	68	1	10	8
Multiple heterosexual partners	%	12	53	15	10	8
Syphilis	%	12	61	8	10	8
Evidence of alcohol abuse	%	11	66	4	10	8
Chlamydia	%	11	57	12	10	8
Gonorrhea	%	11	58	12	10	8
Cytomegalovirus	%	10	58	12	10	8
Sexual contact with AIDS cases	%	10	69	1	10	8
Less than 18 years old	%	9	45	26	10	8
Over 40 years old	%	9	31	40	10	8
Criminal record	%	9	56	13	10	8
Less than average intelligence	%	8	53	18	10	8
Residence in high HIV area	%	6	48	25	10	8
Less than high school degree	%	6	33	39	10	8
Evidence of child abuse	%	6	67	7	10	8
Less than average height	%	3	13	62	10	8
Married	%	>0.5	2	76	10	8

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B)
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

even one deleterious gene would cause the donor to express the symptoms of the disease. Therefore, a healthy donor can be presumed to be free of the trait. For example, 53 percent would screen out someone with a family history of neurofibromatosis; diagnosis of those with the disorder is possible from the characteristic cafe au lait spots on their bodies (although this could be missed in some donors suffering from very few visible symptoms).

With other diseases, such as Huntington's chorea, it is very difficult to test for carrier status, and its onset late in life makes it impossible to determine clinically if a donor has the deleterious gene. One available test requires extensive testing among related family members, is very time-consuming, and has an approximately 2-percent error rate. A newer test reduces the error rate, but is not widely available. Given the severity of the disease, and the difficulty of determining if a person has the gene, **it is surprising that the rate of rejection for apparently healthy donors having a family history of Huntington's (63 percent) is similar to that for those with a family history of Duchenne's muscular dystrophy or hemophilia, as apparently healthy donors could pass on Huntington's to their offspring, but not the other two diseases.**

The variation among practitioners concerning rejection of donors with family histories of depression, Alzheimer's disease, malignant melanoma, and astigmatism reflect the current lack of definitive information on the role genetic predisposition plays in the etiology of these disorders.

The only condition on a list of 17 that a plurality of practitioners do not feel to be a basis for

Table 2-35.—Inherited Conditions and Donor Rejection[a]

(Question 41):[b] For each of the following conditions, would you be likely to reject a donor only if he had the condition, if anyone in the donor's immediate family had the condition, or would you not reject a donor even if he had the condition?

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Reject if any family history	Reject only if donor has	Not reject even if donor has	Practice only artificial insemination by husband	Semen bank only
Huntington's chorea	%	63	25	1	9	8
Duchennes muscular dystrophy	%	61	27	1	9	8
Cystic fibrosis	%	55	29	4	9	8
Neurofibromatosis	%	53	29	4	9	8
Tay-Sachs	%	50	33	2	9	8
Hemophilia	%	49	32	4	9	8
Mental retardation	%	48	38	2	9	8
Thalassemia	%	47	33	5	9	8
Sickle cell anemia	%	46	35	4	9	8
Alzheimer's disease	%	40	34	10	9	8
Hypercholesterolemic heart disease	%	36	32	15	9	8
Diabetes	%	31	38	14	9	8
Malignant melanoma	%	27	38	18	9	8
Depression	%	24	36	20	9	8
Asthma	%	16	29	34	9	8
Severe astigmatism	%	16	27	36	9	8
Obesity	%	13	24	42	9	8

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

rejecting a donor is obesity. Although 13 percent of practitioners would reject a donor with a family history of obesity, and 24 percent would reject a donor who is obese, 42 percent of practitioners reported that they would not reject a donor who has the condition. Obesity is now thought to have some genetic component, but the predisposition interacts with a number of strong environmental factors in most cases.

CHARACTERISTIC MATCHING

On average, about two-thirds of the requests for artificial insemination are accompanied by a request from the recipient to use a donor who meets certain criteria. Among physicians offering AID, 78 to 88 percent stated they are "willing" to select donor characteristics to recipient specifications. **Overall, 72 percent of all physicians offering artificial insemination are willing to match at least some recipient specifications** (table 2-36), **commonly race (97 percent), eye color (94 percent), complexion (90 percent), height (90 percent), ethnic or national origin (84 percent), weight (83 percent), body type (82 percent), and hair texture (81 percent)** (table 2-37). **A majority also match specifications concerning the donor's educational attainment (66 percent), age (62 percent), intelligence quotient (57 percent), and religion (56 percent)**, although a fairly substantial proportion of physicians who are generally willing to match at least some recipient specifications say that they would not try to match on the basis of education (29 percent), age (31 percent), intelligence quotient (37 percent), or religion (39 percent). **A majority of physicians refuse to match hobbies (56 percent) or income (72 percent). Nonetheless, 39 percent will match for hobbies, and 22 percent for income**. Physicians are more evenly split on whether they will (45 percent) or will not (50 percent) match for special abilities.

Table 2-36.—Willingness To Select Donor Characteristics[a]

(Question 10):[b] Are you generally willing to select donor characteristics to recipient specifications?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Practice only artificial insemination by husband	Not applicable
Total	(367)	%	72	20	7	1
AI patients/past year						
4-10	(115)	%	55	31	13	1
11-50	(169)	%	77	17	5	0
51-100	(47)	%	87	9	0	4
>100	(36)	%	89	11	0	0
Proportion AIH[d]						
100%	(61)	%	15	45	40	0
75-99%	(70)	%	78	16	1	3
25-74%	(144)	%	82	16	0	1
0-24%	(91)	%	88	12	0	0
Practice						
Office	(296)	%	71	21	8	0
Hospital	(66)	%	77	17	2	3
Age						
Under 35	(21)	%	67	29	0	0
35 to 49	(221)	%	73	20	6	<0.5
50 or over	(121)	%	73	17	9	1
Sex						
Male	(339)	%	71	20	7	1
Female	(28)	%	79	14	4	4

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988

Table 2-37.—Specific Donor Characteristics[a]

(Question 11):[b] Which of the following donor characteristics are you normally willing to try to match, if requested?

Base: Have accepted 4 or more patients for artificial insemination in the past year and willing to match donor characteristics to recipient characteristics

Unweighted base (264)[c]		Willing	Not willing	Not sure
Race	%	97	2	2
Eye color	%	94	4	2
Complexion	%	90	7	3
Height	%	90	7	3
Ethnic/national origin	%	84	14	3
Weight	%	83	13	4
Body type	%	82	14	4
Hair texture	%	81	16	3
Educational attainment	%	66	29	5
Age	%	62	31	6
I.Q.	%	57	37	6
Religion	%	56	39	5
Special abilities	%	45	50	6
Hobbies or interests	%	39	56	6
Income	%	22	72	6

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988

SEX SELECTION

Fourteen percent of practitioners regularly doing artificial insemination say that they offer sperm separation for preconception sex selection. Willingness to provide this appears to be wholly a function of practice size, rising from 5 percent of those with 4 to 10 patients per year to 31 percent of those with more than 100 patients per year. Practitioners with small practices most often cite a lack of facilities as the reason for not offering the service, with ethical concerns expressed by one in six physicians. The survey instrument's questions could not substitute for a prospective clinical trial of the efficacy of sperm separation techniques, but the survey results did indicate that physicians do not generally perceive the technique as effective.

FRESH AND FROZEN SEMEN

Use of Fresh Semen

Nearly one third of those regularly doing artificial inseminations rely exclusively on fresh semen (28 percent). Four percent did not respond to the question, stating that they do only AIH (4 percent), thus implying that they feel questions concerning usage of frozen semen do not apply to them (table 2-38). About a quarter rely entirely on frozen semen. Practitioners who do only AIH use fresh semen almost exclusively. **More than one-fifth (22 percent) of those who do artificial insemination by donor, however, use fresh semen exclusively** (table 2-38).

Seventy-two percent of those regularly doing artificial insemination used fresh semen in the past year (table 2-39). The uniform frequency of fresh semen use among physicians whose practices vary from 0 to 99 percent AID indicates that fresh semen is used for such inseminations even by physicians who have access to and use frozen semen for part of their practice (table 2-40).

These data were collected in 1987. As of February 1988, the American Fertility Society, the Centers for Disease Control, and the Food and Drug Administration have all recommended that only frozen semen be used, in conjunction with a minimum 6-month quarantine period and periodic donor retesting for evidence of antibodies. to HIV. Physician practice may have substantially changed with respect to the use of fresh and frozen semen as a result of the 1988 recommendations. However, it should be noted that the American Association of Tissue Banks has been publishing standards since 1985 directing its member sperm banks to use of frozen semen,

Table 2-38.—Fresh and Frozen Semen: User Profile[a]

(Question 32a):[b] Have you performed any artificial insemination in the past year in which fresh sperm was used?

(Question 43a):[b] Have you performed any artificial insemination in the past year in which frozen sperm were used?

Base: Have accepted 4 or more patients for artificial insemination in the past year and reported type of semen

	Unweighted base[c]		Fresh only	Fresh and frozen	Frozen only	Not applicable
Total	(363)	%	28	40	23	9
Insemination patients/past year						
4-10	(113)	%	39	20	25	17
11-50	(167)	%	26	46	21	7
51-100 ...	(46)	%	11	50	35	4
>100	(37)	%	16	68	11	5
Proportion AIH[e]						
100%	(60)	%	55	2	2	42
75-99% ..	(69)	%	22	52	23	3
25-74% ..	(142)	%	22	49	25	4
0-24%	(90)	%	22	42	34	1
Practice						
Office	(292)	%	28	40	21	11
Hospital ..	(66)	%	24	39	30	6

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Includes 4% reporting "AIH Only".

[d] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated, Unweighted sample base does not add to 363 where physicians failed to respond to particular question concerning demographic characteristic.

[e] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Table 2-39.—Use of Fresh Semen[a]

(Question 32a):[b] Have you performed any artificial insemination in the past year in which fresh sperm was used?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Not applicable
Total	(367)	%	72	25	2
Insemination patients/past year					
4-10	(115)	%	69	28	4
11-50	(169)	%	74	23	2
51-100	(47)	%	65	37	0
>100	(36)	%	89	11	0
Proportion AIH[d]					
100%	(61)	%	78	15	7
75-99%	(70)	%	77	23	1
25-74%	(144)	%	72	25	2
0-24%	(91)	%	67	34	0
Practice					
Office	(296)	%	74	24	2
Hospital	(66)	%	65	35	–

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Table 2-40.—Number of Inseminations: Fresh Semen[a]

(Question 32b):[b] Approximately how many inseminations have you performed in the past year, using fresh sperm?

Base: Accepted 4 or more patients for artificial insemination in the past year and has used fresh semen

	Unweighted base[c]	Mean	Not sure
Total	(266)	106.5	2%
Insemination patients/past year			
4-10	(79)	20.0	1
11-50	(125)	76.2	1
51-100	(30)	166.1	3
>100	(32)	374.4	6
Proportion AIH [d]			
100%	(48)	40.4	0
75-99%	(53)	129.9	0
25-74%	(104)	109.0	3
0-24%	(60)	129.1	2
Practice			
Office	(220)	102.5	2
Hospital	(43)	131.2	0

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 266 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988

with a 2-month quarantine and periodic donor rescreening.

Sources of Fresh Semen

The most common source of fresh semen is the recipient's husband or partner: 94 percent of practitioners who have used fresh semen report having done AIH (table 2-41). Medical students are the next most common source, used for AID by 44 percent of the physicians regularly doing artificial insemination, with graduate students (34 percent), hospital personnel (23 percent), and other physicians (20 percent) also having been used by at least one out of five physicians. Few practitioners reported having used their own semen (2 percent).

Use of Frozen Semen

Six out of ten physicians who regularly provide artificial insemination have used frozen semen in the past year. Its use is uncommon among those doing only AIH (5 percent), but for all others, regardless of the proportion of their practices devoted to AIH, approximately three-quarters have used frozen semen in the past year.

Sources of Frozen Semen

Most practitioners who use frozen semen report that they obtain it from commercial sperm banks (74 percent); hospital supplies are used by no more than 11 percent of these physicians (table 2-42). Use of commercial sperm banks, however, is a function of practice size, declining from 88 percent of those with 4 to 10 patients per year to 55 percent of those with more than 100 patients per year. In fact, 62 percent of those with more than 100 patients per year do at least some of their inseminations with semen they have frozen and stored themselves, although this is generally restricted to physicians with a hospital-based practice.

Quarantine Periods

Seventy-five percent of the practitioners who use frozen semen report that they or their supplier quarantine the semen prior to use (table 2-43), although quarantining is less common

Table 2-41.—Sources of Fresh Semen[a]

(Question 33):[b] Do you use the sperm of husbands or partners?

(Question 34):[b] Which of the other following sources have you used to obtain fresh sperm in the past year?

Base: Have accepted 4 or more patients for artificial insemination in the past year and has used fresh semen

		Insemination patients/past year			
	Total	4-10	11-50	51-100	>100
Unweighted base:[c]	(266)	(79)	(125)	(30)	(32)
	%[d]	%	%	%	%
Husbands/partners	94	94	93	93	97
Medical students	44	26	46	70	59
Graduate students	34	12	37	60	50
Nonhospital personnel	24	14	26	33	31
Hospital personnel	23	10	27	37	25
Other doctors	20	9	26	30	19
Andrology laboratories	18	12	21	20	19
Self	2	1	2	0	3

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988

Table 2-42.—Sources of Frozen Semen[a]

(Question 44):[b] Which of the following sources have you used in the past year to obtain frozen sperm?

Base: Accepted 4 or more patients for artificial insemination in the past year and has used frozen semen

	Unweighted base[c]		Own supplies	Hospital supplies	Commercial vendor	Other
Total	(232)	%	26	7	74	4
AI patients/past year						
4-10	(51)	%	2	4	88	10
11-50 ...	(113)	%	20	11	78	2
51-100 ..	(39)	%	46	3	59	0
>100 ...	(29)	%	62	3	55	3
Proportion AIH[d]						
100% ...	(3)	%	0	0	100	0
75-99% .	(52)	%	12	12	86	2
25-74% .	(107)	%	32	5	68	5
0-24% ..	(69)	%	28	7	72	3
Practice						
Office ...	(184)	%	19	6	80	4
Hospital .	(47)	%	51	11	51	0

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 232 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Table 2-43.—Use of Quarantine: Frozen Semen[a]

(Question 46):[b] Do you or your supplier have a quarantine period prior to use of frozen sperm?

Base: Accepted 4 or more patients for artificial insemination in the past year and has used frozen semen

	Unweighted base[c]		Yes	No	Not sure
Total	(232)	%	75	20	5
Insemination patients/past year					
4-10	(51)	%	66	34	2
11-50	(113)	%	70	22	8
51-100	(39)	%	90	5	5
>100	(29)	%	90	10	0
Proportion AIH[d]					
100%	(3)	%	100	0	0
75-99%	(52)	%	83	12	4
25-74%	(107)	%	76	19	6
0-24%	(69)	%	64	30	6
Practice					
Office	(184)	%	72	22	6
Hospital	(47)	%	85	15	0

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 232 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

among those with 4 to 50 patients a year (66 to 70 percent) than by those with larger practices (90 percent). Hospital-based practices are also more likely (85 percent) than office-based practices (72 percent) to have a quarantine period (85 percent). **Quarantine periods average 3.6 months, although a quarter of the physicians report a longer period, usually 6 months** (table 2-44).

Table 2-44.—Length of Quarantine Period: Frozen Semen[a]

(Question 47):[b] How long is that quarantine period?

Base: Have accepted 4 or more patients for artificial insemination in the past year, has used frozen semen with a quarantine period

Unweighted base (173)[c]	Total
	%
One month	1
Two months	5
Three months	59
Four months	6
Five months	1
Six months	17
Seven months	1
Eight months	1
Nine months or more	0
Not sure	10
Mean	3.6 months

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

PREGNANCY OUTCOMES AND RECORDKEEPING

Tracking Pregnancy Outcomes

Seventy-seven percent of the fertility society members who are regularly doing artificial insemination report that they know whether their patients become pregnant (table 2-45). These physicians report that nearly half of all the women they see (i.e., those seeking AIH and AID) do become pregnant, on average after seven inseminations over a period of 4.4 cycles. Of course, these recollections by physicians cannot substitute for prospective clinical trials of the efficacy of artificial insemination protocols. Further, figures on the number of inseminations and cycles vary greatly, according to the reason for seeking artificial insemination, whether the semen is washed or otherwise treated, and on the precise placement of the semen during insemination.

Table 2-45.—Awareness of Outcome[a]

(Question 24):[b] In what percentage of cases that you have treated by artificial insemination do you know whether pregnancy is achieved as a result or not?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]	Mean percentage
Total	(367)	77.1
AI patients/past year		
4-10	(115)	67.4
11-50	(169)	79.0
51-100	(47)	86.3
>100	(36)	88.0
Proportion AIH [d]		
100%	(61)	54.4
75-99%	(70)	82.4
25-74%	(144)	81.0
0-24%	(91)	82.4
Practice		
Office	(296)	76.5
Hospital	(66)	84.8

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Physicians do not necessarily follow the entire course of the pregnancy, as the patient's obstetrician normally would; nearly half report that they do not. By combining the estimated proportion of patients who eventually become pregnant as a result of artificial insemination with the proportion of pregnancies from artificial insemination that yield live births, the survey suggests that **live births are achieved in 37.7 percent of cases involving artificial insemination.**

The likelihood of following the full course of a patient's pregnancy varies with a physician's practice size, from 74 percent of those with 4 to 10 patients a year to 24 to 28 percent of those with more than 50 patients a year.

Birth Outcomes

Physicians may know outcomes without actually following a woman's pregnancy by, for example, having women send back postcards with news of a birth or miscarriage (Raboy, 1986). Some 64 percent of physicians regularly practicing artificial insemination know whether pregnancy was achieved, a higher number than those following the pregnancies.

The majority of physicians who follow the births of their artificial insemination recipients (73 percent) report that they have never encountered a case of birth defects (table 2-46). Another 20 percent report one or two cases of birth defects in their experience. Four percent report three or more cases of birth defects among the offspring of their inseminations. While the survey data do not permit a direct comparison of the rate of birth defects among the offspring of artificial insemination with the offspring of natural insemination (the survey collected information on the number of patients accepted for insemination *in the past year* and the physician's *lifetime* experience of birth defects), they do not suggest that children conceived by artificial insemination are suffering from an incidence of birth defects in excess of the general population.

Although most practitioners follow the outcomes of the live births of patients whom they have inseminated, far fewer (16 percent) report

Table 2-46.—Experience With Birth Defects[a]

(Question 30b):[b] How many cases of birth defects have you encountered?

Base: Accepted 4 or more patients for artificial insemination in the past year and follows outcomes of live births

	Unweighted base[c]		None	One	Two	Three	More than four	Not sure	Mean no. of cases
Total	(233)	%	73	11	9	2	2	2	0.5
Insemination patients/past year									
4-10	(74)	%	93	7	0	0	0	0	0.1
11-50	(103)	%	79	9	7	2	1	2	0.3
51-100	(30)	%	40	20	27	7	7	0	1.4
>100	(26)	%	31	23	23	4	12	8	1.4
Proportion AIH[d]									
100%	(36)	%	94	3	3	0	0	0	.1
75-99%	(44)	%	70	9	14	2	2	5	.6
25-74%	(90)	%	70	15	9	3	2	1	.5
0-24%	(63)	%	70	13	10	2	5	2	.7
Practice									
Office	(189)	%	79	8	8	2	2	1	.4
Hospital	(43)	%	46	26	14	5	5	5	1.0

[a] The sample is the fertility society sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 233 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988

that they follow the health and development of children from these inseminations subsequent to birth. Consequently, developmental problems and certain forms of genetic disorders that do not manifest themselves at birth would not normally be tracked by these practitioners.

Recordkeeping

Fifty-four percent of those regularly doing artificial insemination keep records permitting them to match donors to the pregnancies resulting from use of the donor's semen. For those using semen from a sperm bank, such records could match the donor code used by the sperm bank to the pregnancy that resulted. Nine percent report that such records are unnecessary, as they do only AIH. Nearly one-third (32 percent) do not keep such records. Such recordkeeping is more likely with increased practice size, from 35 percent of those with 4 to 10 patients a year to 78 to 80 percent of those with more than 50 patients a year. Similarly, hospital-based practices are more likely (74 percent) than office-based practices (51 percent) to keep such records.

The information maintained in the donor records, beyond matching the donor to inseminations, varies according to the size of the practice. On average, 71 percent of the physicians maintaining such records will also know how many pregnancies have been achieved with the semen of each donor (table 2-47). Such information is less frequently kept by those with 4 to 10 patients (50 percent) than those with more than 100 patients (100 percent). Similarly, most practitioners who keep donor records also note family genetic history (71 percent), number of women inseminated (68 percent), number of children born (65 percent), physical examinations (59 percent), and followup examinations (52 percent). However, these details are more often kept by those with large practices than those with small or office-based practices.

Access to Donor Records

A majority of physicians regularly doing artificial insemination who keep donor records will not give anyone access to them, under any circumstances, even if all identifying information

Table 2-47.—Types of Records Kept[a]

(Question 49):[b] Do you keep records for each donor of:

Base: Accepted 4 or more patients for artificial insemination in the past year and keeps donor records

		Insemination patients in past year			
Unweighted base:[c]	Total (199)	4-10 (41)	11-50 (93)	51-100 (37)	>100 (28)
	%[d]	%	%	%	%
Family genetic history	71	52	72	81	89
Number of pregnancies achieved	71	50	70	76	100
Number of women inseminated	68	58	66	70	89
Number of children born	65	52	63	65	93
Physical examination	59	38	60	65	82
Follow-up examinations	52	28	51	65	75

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Since multiple choices were permitted, percentages may add to more than 100%.

SOURCE: Office of Technology Assessment, 1988.

about the donor is removed. Approximately three-quarters of practitioners with donor records say that they would not permit access to the donors themselves (76 percent), to recipients (72 percent), to the partners of recipients (73 percent), or to the resulting children (77 percent) (table 2-48). Nor would they allow access, even without the donors' names, to public health departments (67 percent) or research scientists (60 percent). **Even judicial requests would be refused by a majority of these physicians (52 percent).**

Table 2-48.—Access to Records[a]

(Question 50):[b] Would you permit access to donor records, including the name of the donor, only excluding the name of the donor, or not at all, to:

Base: Accepted 4 or more patients for artificial insemination in the past year and keeps donor records

Unweighted base (199)[c]

		Access with name	Access without name	No access	Not sure
Donor	%[d]	8	9	76	6
Recipient	%	2	20	72	5
Recipient partner	%	2	19	73	5
Offspring of insemination	%	1	16	77	5
Public health department	%	2	25	67	4
Research scientists	%	<0.5	33	60	5
Judicial requests	%	10	30	52	6

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] Items are in order as they appear on survey instrument.

SOURCE: Office of Technology Assessment, 1988.

COSTS OF ARTIFICIAL INSEMINATION

Preinsemination Costs

The cost of screening, testing, and consultative activities varies among practitioners. Approximately 4 out of 10 who do artificial insemination on a regular basis report that the average cost to their patient for the consultations, examinations, and testing prior to the first actual insemination is under $100 (table 2-49), although 9 percent estimate the cost of preinsemination services at more than $1,000.

The average cost of preinsemination services across all practitioners is $309. Physicians who

Table 2-49.—Preinsemination Costs: Total [a]

(Question 59):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for the consultations, examinations and testing prior to the first actual insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367) [c]	Total
	%
Under $100	38
$100-199	11
$200-299	15
$300-499	15
$500-999	11
$1,000 and over	9
Not sure	1
Mean cost	$309

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-50.—Preinsemination Costs, by Physician Characteristics [a]

(Question 59):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for the consultations, examinations and testing prior to the first actual insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]	Mean cost
Total	(367)	$309
Insemination patients/past year		
4-10	(115)	311
11-50	(169)	275
51-100	(47)	265
>100	(36)	521
Proportion AIH[d]		
100%	(61)	145
75-99%	(70)	372
25-74%	(144)	357
0-24%	(91)	300
Type of semen		
Fresh	(100)	293
Fresh/frozen	(146)	324
Frozen	(84)	394
Practice		
Office	(296)	298
Hospital	(66)	376
Specialty		
OB/GYN[e]	(307)	303
Other	(53)	371

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.
[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.
[e] Obstetrics/gynecology.

SOURCE: Office of Technology Assessment, 1988.

do inseminations only with husband or partner semen charge $145, on average, for these services (table 2-50), approximately half the rate ($300 to $372) charged by physicians who do AID as well. This is consistent with earlier findings that physicians doing only AIH tend to require fewer tests. Hospital-based practices charge more ($376), on average, than do office-based practices ($298) for initial consultations, and practices with 100 patients or fewer charge less ($265 to $311) than those with more than 100 patients ($521).

Cost of Insemination

The average cost to the patient for each insemination also varies considerably among practitioners. Approximately a third report an average cost per insemination of less than $50 (table 2-51). A similar proportion of practitioners (38 percent) report an average per insemination cost of between $50 and $150. A quarter of practitioners estimate that the average is $150 or more.

For all fertility society members regularly doing artificial insemination, the average cost to a patient for each subsequent insemination is $92 (table 2-52), with variation largely due to the source of the semen. In cases of AIH, where there is no charge for the semen, the only costs are medical costs. The survey found that the average cost per additional insemination is $30 in practices doing only AIH. By contrast, the average cost in practices doing AID varies from $97 to $115.

Total Cost of Insemination

To achieve pregnancy, physicians regularly doing artificial insemination reported that on average a woman spends $309 in initial consultations, examinations, and testing, and $92 for each of seven inseminations (used during an average of 4.4 cycles), for a total cost of $953. However, practices doing only artificial insemination by husband report an average cost per patient of one-quarter ($316) that charged by other types of practice ($1,017 to $1,248) (table

Table 2-51.—Insemination Costs: Total[a]

(Question 60):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for each subsequent insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]	Total
	%
Under $50	36
$50-99	15
$100	12
$101-149	11
$150	9
$151-199	4
$200	5
Over $200	8
Not sure	1
Mean cost	$92

[a] The sample is the fertility society sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Percentages and means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated

SOURCE: Office of Technology Assessment, 1988

2-53). There is relatively little variation in the total patient cost between practices with 4 to 10 patients a year ($822), 11 to 50 patients ($889), and 51 to 100 patients ($945). Practices with more than 100 patients report a per-patient cost ($1,718) nearly twice that of smaller practices.

The full average cost per recipient for artificial insemination by donor or by husband, $953, yields an estimated expenditure on the order of $164 million spent by 172,000 women each year for this procedure. This figure may overestimate the cost if women undergo the inseminations over more than a 12-month period.

Physicians report that 51 percent of these women have insurance coverage for the procedure, and that on average the insurance covers 48 percent of the total cost. At a national level, this means that **recipients pay three-quarters of the costs of artificial insemination out of their own pockets.**

Table 2-52.—Insemination Costs by Physician Characteristic[a]

(Question 60):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for each subsequent insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]	Mean cost
Total	(367)	$92
Insemination patients/past year		
4-10	(115)	74
11-50	(169)	93
51-100	(47)	100
>100	(36)	133
Proportion AIH[d]		
100%	(61)	30
75-99%	(70)	103
25-74%	(144)	97
0-24%	(91)	115
Type of semen		
Fresh	(100)	77
Fresh/frozen	(146)	106
Frozen	(84)	112
Practice		
Office	(296)	88
Hospital	(66)	113
Specialty		
OB/GYN[e]	(307)	89
Other	(53)	106

[a] The sample is the fertility society sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[e] Obstetrics/gynecology.

SOURCE: Office of Technology Assessment, 1988

Table 2-53.—Total Cost of Procedure[a]

(Question 59):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for the consultations, examinations and testing prior to the first actual insemination?

(Question 25):[b] Based on your experience, what is the average number of inseminations needed to achieve pregnancy?

(Question 60):[b] What do you estimate the average cost is to your patient (or her insurance carrier) for each subsequent insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]	Initial cost	Subsequent inseminations			Total cost
			Number	Cost per	Total	
Total	(367)	$309	7.0	$92	$644	$953
Insemination patients/past year						
4-10	(115)	311	6.9	74	511	822
11-50	(169)	275	6.6	93	614	889
51-100	(47)	265	6.8	100	680	945
>100	(36)	521	9.0	133	1197	1718
Proportion AIH[d]						
100%	(61)	145	5.7	30	171	316
75-99%	(70)	372	8.5	103	876	1248
25-74%	(144)	357	6.8	97	660	1017
0-24%	(91)	300	7.0	115	805	1105
Type of semen						
Fresh	(100)	293	5.9	77	454	747
Fresh/frozen	(146)	324	6.9	106	731	1055
Frozen	(84)	394	8.4	112	941	1335
Practice						
Office	(296)	298	7.2	88	634	932
Hospital	(66)	376	6.2	113	701	1077

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[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Means are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

STANDARDS, GUIDELINES, AND REGULATION

The majority of fertility society members who do artificial insemination on a regular basis report that they are aware of specific professional guidelines for the selection of recipients or donors for artificial insemination (76 percent). These findings, however, overstate general awareness of professional standards because the sample was drawn from the membership of two national fertility organizations, one of which has issued guidelines and published them in the journal that all members automatically receive. By contrast, 44 percent of the cross-sectional sample of physicians who have four or more insemination patients a year are aware of professional guidelines, but this sample is too small for confidence in the estimate. Even this figure may overestimate awareness in the total population of physicians doing artificial insemination, as those with only one to three patients a year were not asked whether they are aware of professional guidelines. **There is a correlation between the number of inseminations done per year and awareness of standards** (table 2-54), and physicians with only one to three may be among the least knowledgeable about professional standards.

Table 2-54.—Awareness of Professional Guidelines[a]

(Question 51):[b] Are you aware of any specific professional guidelines or suggested procedures for the selection of recipients or donors for artificial insemination?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Yes	No	Practice only artificial insemination by husband	Sperm bank only	No response
Total	(367)	%	76	15	5	1	3
Insemination patients/past year							
4-10	(115)	%	65	20	12	0	4
11-50	(169)	%	75	17	4	1	3
51-100	(47)	%	94	6	0	0	2
>100	(36)	%	94	3	0	0	3
Proportion AIH[d]							
100%	(61)	%	42	23	32	2	3
75-99%	(70)	%	80	17	0	0	4
25-74%	(144)	%	84	13	0	1	3
0-24%	(91)	%	86	12	0	0	3
Practice							
Office	(269)	%	74	17	6	1	3
Hospital	(66)	%	91	6	3	0	0
Age							
Under 35	(21)	%	81	14	5	0	0
35 to 49	(221)	%	78	16	5	1	<0.5
50 or older	(121)	%	73	14	7	0	7
Sex							
Male	(339)	%	75	16	5	1	4
Female	(28)	%	89	4	7	0	0
Cross-sectional sample[e]	(36)	%	44	39	6	0	11

[a] Except as noted otherwise in last line, the sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[e] Cross-sectional sample physicians who have accepted 4 or more patients for artificial insemination in the past year.

SOURCE: Office of Technology Assessment, 1988.

Awareness of professional standards is important because it is virtually tantamount to adoption of at least some of those procedures, although the gap between professional society recommendations and screening for infectious and heritable diseases indicates that some physicians are not following all the guidelines of which they are aware. Guidelines include procedures for screening recipients and donors, quarantining semen, and testing semen for motility, morphology, and other fertility indicators. Among those aware of such guidelines or procedures, 9 out of 10 have adopted those standards (table 2-55), with adoption widespread even among practices with only 4 to 10 patients (86 percent) and those that do only AIH (72 percent).

Among those who have adopted some professional guidelines, the vast majority report that they use those of the American Fertility Society (85 percent) (see box 2-A). The other guidelines used by significant numbers of practitioners are those of the American College of Obstetricians and Gynecologists (ACOG) (7 percent) and the American Association of Tissue Banks (6 percent) (AATB). ACOG, it should be noted, has adopted the guidelines of the American Fertility Society. AATB, an organization concerning itself with tissue banking in general, issues standards

Table 2-55.—Adoption of Professional Guidelines[a]

(Question 59):[b] Have you adopted any of these guidelines or procedures as your protocol for artificial insemination?

Base: Accepted 4 or more patients for artificial insemination in the past year and are aware of guidelines

	Unweighted base[c]		Yes	No	Practice only artificial insemination by husband	No response/ not applicable
Total	(278)	%	91	8	<0.5	1
Insemination patients/past year						
4-10	(74)	%	86	11	0	3
11-50	(127)	%	91	8	1	0
51-100	(43)	%	93	7	0	0
>100	(34)	%	94	6	0	0
Proportion AIH[d]						
100%	(25)	%	72	20	4	4
75-99%	(55)	%	94	6	0	0
25-74%	(120)	%	91	8	0	1
0-24%	(77)	%	94	6	0	0
Practice						
Office	(217)	%	89	10	<0.5	1
Hospital	(60)	%	97	3	0	0
Age						
Under 35	(17)	%	88	12	0	0
35 to 49	(172)	%	92	7	0	1
50 or older	(88)	%	89	10	1	0
Sex						
Male	(253)	%	90	9	<0.5	1
Female	(25)	%	100	0	0	0
Cross-sectional sample[e]	(16)	%	81	19	0	0

[a] Except as noted otherwise in last line, the sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

[e] Cross-sectional sample physicians who have accepted 4 or more patients for artificial insemination in the past year and are aware of guidelines.

SOURCE: Office of Technology Assessment, 1988.

Box 2-A.—American Fertility Society Guidelines for Physician Practice of Artificial Insemination by Donor

In 1986, the American Fertility Society issued revised guidelines for physician practice of artificial insemination by donor. They called for "careful consideration . . . to the possible need for psychologic evaluation and counseling" for the recipient and her partner, appropriate warnings of the emotional and psychological risks of the procedure, evaluation and correction if possible of any male partner infertility before resorting to AID, and careful evaluation of the recipient's reproductive health, including tests for antibodies to HIV and cytomegalovirus (CMV).

Sperm donors are to have their sperm screened for motility, morphology, concentration, and other indicators of fertility, and donors themselves are to undergo physical examination and blood testing for indications of syphilis, hepatitis B, gonorrhea, chlamydia, CMV, and HIV infection. The guidelines do not direct physicians to reject donors testing positive to CMV, as some physicians might still choose to use them for women who also test positive. Rescreening at 6-month intervals is suggested for all but syphilis. Fresh semen donation was permitted under the 1986 guidelines, with proper attention given to identifying donors at higher than average risk for HIV infection. Matching to recipient-specified physical characteristics was deemed appropriate, but mixing of donor and husband sperm was discouraged, as possibly interfering with fertilization.

In 1988, the American Fertility Society revised its guidelines to suggest to practitioners that they use only frozen semen following a minimum 6-month quarantine and after the donor had been retested and found once again to be seronegative to HIV. The AFS announcement coincided with announcements by the Centers for Disease Control and the Food and Drug Administration to the same effect.

SOURCES: American Fertility Society, "New Guidelines for the Use of Semen Donor Insemination: 1986," *Fertility and Sterility* 46 (Supp. 2): 95S–110S, 1986; American Fertility Society, "Revised New Guidelines for the Use of Semen-Donor Insemination," *Fertility and Sterility* 49: 211, 1988; U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, "Semen Banking, Organ and Tissue Transplantation, and HIV Antibody Testing," *Morbidity and Mortality Weekly Report* 37:57–63, 1988.

that are mandatory for its member sperm banks. The other practitioners who have adopted professional guidelines report using those of their sperm bank (3 percent), their own guidelines (4 percent), or some other guidelines (6 percent) (table 2-56).

The widespread adoption of some of the AFS guidelines by practitioners has to be qualified by the recognition that the vast majority of the sample are members of AFS. Yet the same can be said about the vast majority of physicians who conduct artificial insemination on a regular basis. Although the cross-sectional sample is too small for any confidence in its estimates, over half the practitioners in this sample who use professional guidelines also use AFS guidelines.

As noted above, AFS guidelines changed in early 1988, in conjunction with a joint statement from the Centers for Disease Control and the Food and Drug Administration (U.S. DHHS, 1988). This survey, conducted in 1987, reflects adherence to earlier professional society guidelines, which permitted donation of fresh semen but recommended taking a medical history that would elicit risk factors (such as intravenous drug use or homosexual contacts) and rejecting donors who appeared to be at risk.

Adequacy of Professional Practices

Most physicians regularly doing artificial insemination feel current practices are adequate or more than adequate to protect donors' privacy (89 percent), recipients' safety (83 percent), offsprings' rights (80 percent), and physicians' freedom from liability (59 percent) (table 2-57).

Thirty-five percent of the physicians feel that protection against liability is inadequate. Survey data indicate that the incidence of legal problems is 2 percent among those with 4 to 10 patients a year, 4 percent among those 11 to 100 patients per year, and 11 percent for those with more than 100 patients annually. Legal problems can be associated, for example, with screening for sexually transmitted or genetic diseases. Insurance, while available, can be quite expensive (Rothman, 1988).

Quality Assurance

A majority of practitioners regularly doing artificial insemination (i.e., accepting more than four insemination patients a year) approve of the current situation regarding involvement of State

Table 2-56.—Guidelines Used[a]

(Question 53):[b] What is the name of those guidelines that you use? (verbatim)

Base: Accepted 4 or more patients for artificial insemination in the past year and have adopted guidelines

	Unweighted base[g]		AFS[c]	ACOG[d]	AATB[e]	Sperm bank guidelines	Own guidelines	Other guidelines	Don't know
Total[f]	(252)	%	85	7	6	3	4	6	4
Insemination patients/past year									
4-10	(64)	%	73	11	0	6	5	3	8
11-50	(116)	%	88	5	4	4	2	6	3
51-100	(40)	%	95	5	10	0	8	10	0
>100	(32)	%	88	6	22	0	3	3	3
Proportion AIH[h]									
100%	(18)	%	83	0	6	0	11	6	6
75-99%	(52)	%	86	4	8	2	0	12	4
25-74%	(109)	%	84	7	6	6	4	5	1
0-24%	(72)	%	86	10	4	0	4	3	7
Practice									
Office	(193)	%	83	8	7	4	4	5	5
Hospital	(58)	%	91	3	5	0	3	9	0
Age									
Under 35	(15)	%	93	0	0	0	7	7	0
35 to 49	(158)	%	85	6	8	3	1	6	4
50 or older	(78)	%	85	9	5	4	6	5	4
Sex									
Male	(227)	%	85	8	7	4	4	5	4
Female	(25)	%	92	0	4	0	0	8	0
Cross-sectional sample[i]	(13)	%	54	15	0	0	0	23	0

[a] Except as noted otherwise in last line, the sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] American Fertility Society.
[d] American College of Obstetricians and Gynecologists.
[e] American Association of Tissue Banks.
[f] Since multiple choices were permitted, percentages may add to more than 100%.
[g] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 252 where physicians failed to respond to particular question concerning demographic characteristic.
[h] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.
[i] Cross-sectional sample physicians who have accepted 4 or more patients for artificial insemination in the past year, and who adopted guidelines.

SOURCE: Office of Technology Assessment, 1988.

public health agencies (56 percent), local medical boards (54 percent), Federal public health agencies (52 percent), and national medical societies (51 percent) with respect to artificial insemination (table 2-58). Nearly half, however, would like to see the involvement of courts either decreased (12 percent) or eliminated (36 percent), and that of hospital professional review organizations either decreased (9 percent) or eliminated (40 percent). In contrast, 34 percent would like to see the involvement of national medical societies increased.

A minority would like to see the current involvement of Federal public health agencies (29 percent) and State public health agencies (23 percent) either reduced or eliminated. A somewhat smaller minority, on the other hand, would like to see Federal (12 percent) and State (16 percent) public health agencies more involved.

National Standards

Most physicians regularly doing artificial insemination favor national standards (unspecified as voluntary or mandatory) for donor

Table 2-57.—Adequacy of Professional Practices[a]

(Question 54):[b] How adequate do you think that present professional practices of artificial insemination are in terms of protecting the:
Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		More than adequate	Adequate	Less than adequate	Practice only artificial insemination by husband	Sperm bank only	Don't know
Donor's privacy	%	34	55	5	2	0	4
Recipient's safety	%	22	61	11	2	0	4
Offspring's rights	%	18	62	12	2	0	6
Physician's liability	%	9	50	35	2	0	4

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-58.—Roles in Quality Assurance[a]

(Question 55):[b] For each of the following agencies, would you like to see their involvement in the quality assurance of artificial insemination procedures increased, remain the same, decreased, or eliminated?
Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Increased	Remain the same	Decreased	Eliminated	Don't know
National medical societies	%	34	51	2	7	6
Local medical boards	%	16	54	3	22	6
State public health agencies	%	16	56	7	16	6
Federal public health agencies	%	12	52	8	21	6
Hospital peer review organizations	%	6	39	9	40	7
Courts	%	6	40	12	36	6

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

screening by sperm banks (80 percent), donor screening by private practitioners (68 percent), recipient screening (57 percent), and record-keeping (58 percent) (table 2-59), **but strongly oppose releasing identifying information about sperm donors to any children conceived with those individuals' sperm.** Support for national standards for donor screening did not significantly vary with size of practice, age or sex of the physician, or whether the practice was office- or hospital-based. Standards for recipient screening engendered the same uniformity of support, except that smaller, office-based practices were somewhat less enthusiastic, perhaps reflecting the fact that physicians with those practices tend to do more AIH than AID.

Regulation of surrogate motherhood, an arrangement in which a woman is artificially inseminated with the intention of relinquishing the child at birth to the genetic father, should take place on the State (29 percent) or Federal (42 percent) level, according to fertility society practitioners regularly doing artificial insemination, but a substantial minority (27 percent) feel no law should regulate this variation on artificial insemination practice (table 2-60). Support for regulation was somewhat greater among younger, female, and hospital-based physicians with large practices.

Table 2-59.—National Standards for Artificial Insemination[a]

(Question 56):[b] Would you tend to favor or oppose the establishment of national standards for artificial insemination for:

Base: Have accepted 4 or more patients for artificial insemination in the past year

Unweighted base (367)[c]		Favor	Oppose	Don't know
Donor screening by sperm banks	%	80	15	5
Donor screening by private practitioners	%	68	26	5
Recordkeeping requirements	%	58	37	5
Recipient screening	%	57	38	6

---

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated.

SOURCE: Office of Technology Assessment, 1988.

Table 2-60.—Regulation of Surrogate Motherhood[a]

(Question 57): [b]Do you believe that the procedures for surrogate motherhood should be regulated by federal legislation, state legislation or not regulated by legislation?

Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Federal law	State law	No law	Do not believe in surrogate motherhood	Don't know
Total	(367)	%	42	29	27	1	5
Insemination patients/past year							
4-10	(115)	%	35	27	27	0	11
11-50	(169)	%	47	28	28	1	2
51-100	(47)	%	44	28	28	0	4
> 100	(36)	%	42	39	19	0	3
Practice							
Office	(296)	%	41	28	30	< 0.5	4
Hospital	(66)	%	53	33	15	0	4
Age							
Under 35	(21)	%	52	33	19	0	5
35 to 49	(221)	%	44	32	24	< 0.5	4
> 50	(121)	%	38	23	33	1	7
Sex							
Male	(339)	%	42	28	28	1	5
Female	(28)	%	43	46	18	0	4

---

[a] The sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 367 where physicians failed to respond to particular question concerning demographic characteristic.

SOURCE: Office of Technology Assessment, 1988.

GENERAL PHYSICIAN ATTITUDES

The survey instrument asked all physicians, regardless of the size of their artificial insemination practice, to respond to a series of questions concerning their attitudes toward the practice. **Physicians as a whole split almost evenly over whether requests for artificial insemination ought to be honored "regardless of marital status or sexual orientation"** (table 2-61). Looking more closely at those who are fertility society members, those "agreeing strongly" were equally likely to be male or female, younger or older. Those disagreeing strongly were more likely to be older. Data concerning the attitudes of female physicians are subject to error due to the small size, but indicate that a larger percentage of female physicians than male physicians disagree strongly with the statement.

With regard to self-insemination, once again physicians split over whether this is a "reasonable alternative to physician assisted insemination" (table 2-62). Neither fertility society members (10 percent) nor physicians from the cross-sectional sample (8 percent) strongly agreed with the statement. In each case, an additional third of the respondents agreed "somewhat" with the statement. Here, female physicians showed a significantly greater tolerance for self-insemination than did male physicians, as did those with smaller practices compared with those with larger practices. This latter finding may reflect the greater proportion of AIH cases seen by those with smaller practices.

Table 2-61.—Recipient Acceptance Factors[a]

(Question 63d):[b] Patient requests for artificial insemination should be honored, regardless of marital status or sexual orientation.
Base: Have accepted 4 or more patients for artificial insemination in the past year

	Unweighted base[c]		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
Total							
Fertility society sample	(646)	%	10	24	27	37	2
Cross-sectional sample	(827)	%	9	19	29	40	4
Insemination patients/past year							
None	(155)	%	11	24	24	39	2
1-3	(122)	%	9	32	28	30	1
4-10	(115)	%	5	22	32	39	2
11-50	(169)	%	13	19	26	41	2
51-100	(47)	%	6	35	26	33	2
>100	(36)	%	22	16	24	38	0
Recipients rejected in past							
None	(166)	%	14	24	34	27	1
1-4	(68)	%	9	18	22	51	2
>5	(131)	%	7	21	23	48	2
Age							
Under 35	(38)	%	11	32	35	24	0
35 to 49	(367)	%	10	23	28	38	1
>50	(232)	%	10	25	24	40	1
Sex							
Male	(594)	%	10	24	28	36	1
Female	(50)	%	10	28	10	48	4

[a] Except as noted in second line, the sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 646 where physicians failed to respond to particular question concerning demographic characteristic.

SOURCE: Office of Technology Assessment, 1988.

Table 2-62.—Self Insemination[a]

(Question 63c):[b] Self insemination is a reasonable alternative to physician assisted insemination in many cases.

	Unweighted base[c]		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
Total							
Fertility society sample	(646)	%	10	34	29	24	3
Cross-sectional sample	(827)	%	8	33	26	23	9
Insemination patients/past year							
None	(155)	%	10	40	24	20	6
1-3	(122)	%	12	37	24	25	2
4-10	(115)	%	5	28	42	21	3
11-50	(169)	%	13	34	29	23	1
51-100	(47)	%	6	37	33	22	4
>100	(36)	%	3	22	24	49	3
Sex							
Male	(594)	%	9	33	30	24	3
Female	(50)	%	14	46	18	18	4

[a] Except as noted in second line, the sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 646 where physicians failed to respond to particular question concerning demographic characteristic.

SOURCE: Office of Technology Assessment, 1988.

Offspring rights to "communicate with their genetic fathers" were uniformly and strongly opposed by the surveyed physicians, regardless of age, sex, or size of practice, although members of a fertility society were distinctly more likely (74 percent) than physicians from the cross-sectional sample (48 percent) to strongly oppose them (table 2-63).

The issue on which physicians' exhibited the greatest diversity of attitudes concerned favored trait specialization (table 2-64). **When asked if they agreed that "there is nothing wrong with sperm banks that specialize in donors with intellectual, artistic, or athletic gifts," 58 percent of the fertility society practitioners and 49 percent of the cross-sectional physicians strongly or somewhat agreed.** Women were somewhat less likely than men to agree, and physicians under age 35 or with practices of over 100 insemination patients a year were the least likely to strongly agree. Nevertheless, in general, roughly equal proportions of physicians agreed strongly, agreed somewhat, disagreed somewhat, or disagreed strongly with the statement.

Table 2-63.—Offspring Rights[a]

(Question 63e):[b] Offspring of artificial inseminations should have a right to communicate with their genetic fathers.

	Unweighted base[c]		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
Total							
Fertility society sample	(646)	%	3	6	15	74	2
Cross-sectional sample	(827)	%	6	15	25	48	6
Proportion AIH[d]							
100%	(61)	%	3	8	20	68	0
75-99%	(70)	%	3	1	14	78	3
25-74%	(144)	%	1	2	9	87	1
0-24%	(91)	%	1	4	10	83	1
Sex							
Male	(594)	%	3	6	15	75	1
Female	(50)	%	0	4	16	72	8

[a] Except as noted in second line, the sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 646 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

Table 2-64.—Favored Trait Specialization[a]

(Question 63g):[b] There is nothing wrong with sperm banks which specialize in doners with intellectual, artistic or athletic gifts.

	Unweighted base[c]		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
Total							
Fertility society sample	(646)	%	22	36	22	19	2
Cross-sectional sample	(827)	%	17	32	21	26	4
Insemination patients/past year							
None	(155)	%	21	31	22	23	2
1-3	(122)	%	24	45	20	10	2
4-10	(115)	%	30	37	18	13	2
11-50	(169)	%	20	35	28	16	1
51-100	(47)	%	13	30	17	39	2
>100	(36)	%	8	30	32	30	0
Proportion AIH[d]							
100%	(61)	%	23	35	23	20	0
75-99%	(70)	%	29	36	20	13	3
25-74%	(144)	%	18	36	23	21	1
0-24%	(91)	%	20	32	27	21	1
Age							
Under 35	(38)	%	8	62	30	3	0
35 to 49	(367)	%	23	35	22	19	<0.5
>50	(232)	%	23	33	22	21	2
Sex							
Male	(594)	%	22	36	22	18	2
Female	(50)	%	18	24	30	24	4

[a] Except as noted in second line, the sample is the fertility society sample.

[b] The code number of the question in the survey instrument (see app. B).

[c] Percentages are presented as weighted sample estimates. The unweighted sample base is presented in parentheses so that the sampling variance for these estimates can be calculated. Unweighted sample base does not add to 646 where physicians failed to respond to particular question concerning demographic characteristic.

[d] "Proportion AIH" means the proportion of the physician's artificial insemination practice in the past 12 months in which husband or partner sperm (rather than donor sperm) was used.

SOURCE: Office of Technology Assessment, 1988.

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Chapter 3

Survey Data: Sperm Bank Practice

Commercial sperm banks provide donor semen to 52 percent of the physicians in the fertility society sample, drawn from the American Fertility Society and the American Society of Andrology members, who regularly perform artificial insemination (i.e., more than four insemination patients per year). Hospital-based sperm banks also supply semen (see ch. 2) but not as frequently (see box 3-A). Most of the 15 facilities that responded to the survey store semen for both artificial insemination by husband (AIH) and artificial insemination by donor (AID), although 2 sperm banks reported providing services only for the latter.

Men most commonly apply to store semen in order to preserve their future ability to have children. Reported reasons include "about to undergo vasectomy" (13 of 15 banks), "fear of gamete damage due to radiation or chemotherapy" (13 of 15), unspecified "fear of future infertility" (8 of 15), "fear of damaging occupational exposures" (7 of 15), "geographical separation from spouse" (4 of 15), "back-up for in vitro fertilization or gamete intrafallopian transfer" (4 of 15), and "desire to have children after death" (1 of 15).

Slightly more than half the sperm banks (8 of 15) require consent of a man's spouse before they will agree to store specimens for possible future use in AIH. All the banks charge an upfront fee of, on average, $100, but fees may range from $40 to $350 and often include the first year of storage. Fourteen sperm banks reported they will store specimens for as long as requested. The average storage fee was $84, and ranged from $12 to $200.

In the event of a donor's death, 12 of 15 sperm banks claim to apply specific protocols to manage specimens stored for artificial insemination by husband. Almost half (7 of 15) will request instructions from the deceased's wife or relatives and will respond accordingly. Another 7 of the sperm banks will destroy the specimen in case of a man's death, and specify no other procedure. However, 12 of 15 banks claimed that they would honor instructions from the donor for postmortem insemination of a spouse or designated representative of the estate.

The sperm banks in the survey tend to sell samples from anonymous donors to doctors rather than directly to recipients: Of the 15 facilities sampled, 9 will sell samples only to doctors and 5 will sell samples to both doctors and recipients (1 bank did not respond). (See box 3-B for information on one bank that will teach women self-insemination.) No banks reported selling samples only to recipients. The number of semen samples sold for AID varies widely. Based on their responses, in the course of 1 month an average of 300 semen samples are sold, but the number can range anywhere from 5 to 2,000 samples per month. The standard charge is on average $83, but it ranges from $50 to $125.

RECIPIENT SPECIFICATIONS

Almost half the sperm banks (7 of 15) reported that they would reject requests for specimens if the recipient, as reported by her physician or as seen by them, seemed unsuitable. Two indicated that such recipient qualification decisions are the responsibility of the physician handling the case. Only 9 facilities responded to the survey question on recipient rejection, however; most that did not respond claimed that they were not involved with recipient selection. **The 9 sperm banks responding were most likely to reject a recipient who is HIV-positive (6 of 9) or who shows evi-**

Box 3-A.—Hospital-Based Sperm Bank Practice

In the summer of 1986, Dr. William Schlaff of the Johns Hopkins University and Dr. Janet Kennedy of the University of Maryland surveyed hospital-based sperm banks providing artificial insemination by donor. Four hundred facilities associated with obstetrics/gynecology departments around the country were identified and asked to respond to a survey questionnaire concerning their practice and protocols. One hundred and thirty responded, but a number incompletely filled out the survey questionnaire. Thus, the number responding to each question varies somewhat.

The respondents included 35 public facilities in existence an average of 8.4 years (range, 1 month to 25 years) and 32 private facilities in existence an average of 10 years (range, 6 months to 35 years). Overall, these facilities averaged nearly 27 inseminations per month.

Sixty-four of 64 facilities screened donors with an interview, oral genetic history, blood screen, and medical history. Thirty-six of 61 (59 percent) performed a physical examination, and 12 of 64 (19 percent) did a karyotype. These proportions are similar to the 10 of 15 commercial facilities surveyed by OTA that performed a physical examination, and 5 of 15 that did a karyotype.

Donors were also screened for a variety of infectious diseases. Sixty-two of 64 (97 percent) screened for human immunodeficiency virus (HIV) infection, with 36 facilities (56 percent) doing followup testing on average every 4.7 months. Syphilis was screened for by 55 of 62 (88 percent) hospital-based facilities, with 24 (38 percent) doing repeat testing. Fifty-four of 64 (84 percent) screened for hepatitis, with 22 (34 percent) repeating the test within a year. As hospital-based sperm banks, drawing largely on medical staff for donors, the risk of hepatitis infection within the donor pool is particularly acute. Fifty-one of 74 (69 percent) screened for gonorrhea, with 24 (32 percent) doing followup testing. Chlamydia was screened for by 41 of 64 (64 percent), with 18 (28 percent) doing repeat tests. A minority of hospital-based facilities tested for mycoplasma (28 of 64), cytomegalovirus (20 of 64), and herpes (10 of 64).

Followup testing is of interest, because 22 of 67 (33 percent) facilities used fresh semen only, and another 29 (44 percent) used a mix of fresh and frozen; without retesting, it is not possible to be sure that the donor is still free of transmissible diseases, and HIV infection may not be detectable until several months after a donor has had contact with the virus. Therefore, his semen may be carrying the virus even if he tests negative. To avoid this problem, commercial sperm banks surveyed by OTA in 1987 generally quarantined a frozen specimen, releasing it only after the donor retested negative.

Public facilities paid donors an average of $34 per visit, while private facilities offered an average of $44. Forty-one of 61 facilities had a limit of 2 to 20 (average, 9) pregnancies that could be initiated by the same donor. Nineteen of 62 facilities would sometimes tell donors whether pregnancies had occurred with their semen, with one facility doing this routinely. However, the genetic parentage might not be readily apparent; 20 of 67 facilities reported that they mix donor semen with that of the recipient's husband.

SOURCE: W. Schlaff, Johns Hopkins University, personal communication, Jan. 5, 1988.

dence of drug abuse, alcohol abuse, or child abuse (5 of 9) (table 3-1). Psychological immaturity and diseases such as hepatitis or cytomegalovirus are also conditions that determine rejection for 4 of 9 facilities. Sexually transmitted diseases such as syphilis and gonorrhea were cited by 3 of 9 banks as reasons for rejection.

All 15 of the sperm banks in the survey reported that they would allow recipients or their physicians to provide specifications for particular donor traits. **Nearly all the banks (14 of 15) match physical characteristics** such as height, weight, eye color, hair texture, and body type. Similarly, 14 facilities match recipients and donors by race, ethnic group, or national origin (table 3-2). **Twelve will match by religion and 11 by educational attainment, special abilities, hobbies, or interests.** Seven sperm banks are willing to match by intelligence quotient. Income is the characteristic that sperm banks are least willing to match (3 of 15).

Another option available to recipients is sperm separation for preconception sex selection. Slightly more than half the banks (8 of 15) offer this service. The average charge for preconception sex selection is $220, and can range anywhere from $140 to $400. The survey, being retrospective, cannot substitute for a clinical trial of the efficacy of sperm separation techniques, but in general the survey data did not indicate that the methods are unequivocally effective.

Box 3-B.—The Sperm Bank of Northern California

Oakland, CA, is home to the Sperm Bank of Northern California, a feminist-run facility known as one of the minority of sperm banks in the United States committed to providing artificial insemination services to any healthy woman or couple regardless of marital status, sexual preference, age, race, or religion. The most notable fact about the Sperm Bank of Northern California is its commitment to providing services to single and lesbian women.

Unlike some facilities, the Sperm Bank of Northern California offers artificial insemination services as well as distributing semen nationwide. Insemination can be done by sperm bank personnel, or women can choose to be taught to self-inseminate, at home or in a room provided for that purpose at the facility.

Recipient screening and counseling is rather stringent. The facility requires women to attend an orientation session describing the medical and legal risks of artificial insemination, and counseling is available upon request before undergoing insemination. Women are also required to undergo a physical examination to identify any fertility problems or risks associated with pregnancy before insemination is available. The screening process may take as long as a month. Women who are emotionally disturbed or addicted to drugs or alcohol will not be accepted; rather, they are referred for counseling, and may be accepted after completing therapy.

The facility's donor screening practices accord with those of the most rigorous banks, but its donor population is somewhat unique; this facility seeks donors who are willing to donate without pay and to be contacted by their offspring. Although donors who wish to remain anonymous are accepted, information about their willingness to be contacted is provided to recipients before their semen is chosen.

SOURCE: B. Raboy, Director, Sperm Bank of Northern California, Oakland, CA, personal communication, Dec. 22, 1986.

Table 3-1.—Criteria for Rejection: Recipients[a]

(Question 10b):[b] Have you ever rejected or would you be likely to reject a request for artificial insemination from a potential recipient because she was/has:

	Have rejected	Would be likely to reject	Not likely to reject
Over 40 years old	1[c]	0	5
Less than average intelligence	1	0	5
Less than high school degree	1	0	5
Gonorrhea	2	1	4
Cytomegalovirus	1	3	4
Syphilis	1	2	4
Genital herpes	1	1	4
Welfare dependent	0	2	4
Less than 18 years old	1	3	3
Hepatitis	1	3	3
History of serious genetic disorders	1	2	3
Criminal record	1	2	3
Evidence of drug abuse	2	3	2
Evidence of alcohol abuse	2	3	2
Psychologically immature	1	3	2
HIV (HTLV) positive	1	5	0
Evidence of child abuse	1	4	0

[a] The sample is the sperm bank sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Responses are not weighted. Not all sperm banks answered all questions

SOURCE: Office of Technology Assessment, 1988

Table 3-2.—Specific Donor Characteristics[a]

(Question 11):[b] Which of the following donor characteristics are you normally willing to try to match, if requested?

	Willing	Not willing
Race	14[c]	0
Body type	14	0
Weight	14	0
Eye color	14	0
Height	14	0
Hair texture	13	0
Complexion	13	1
Ethnic/national origin	13	1
Religion	12	3
Educational attainment	11	3
Special abilities	11	3
Hobbies or interests	11	3
Age	10	4
I.Q.	7	7
Income	3	11

[a] The sample is the sperm bank sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Responses are not weighted. Not all sperm banks answered all questions

SOURCE: Office of Technology Assessment, 1988

DONOR SELECTION

Sperm banks obtain donors using a variety of formal and informal methods (table 3-3). Almost all (13 of 15) state that "word of mouth" is a useful means of acquiring donors. Another common method (reported by 9 of 15 banks), especially for facilities located near universities, is various advertising vehicles such as student newspapers or magazines. Referrals from other sperm banks, physicians, other health care professionals, or other donors were also cited as a method to recruit donors.

Table 3-3.—Obtaining Donors[a]

(Question 15):[b] How do you obtain donors?[c,d]	
Word of mouth	13
Advertisement in student newspapers or magazines	9
Advertisement in general interest newspapers or magazines	4
Flyers	3
Direct mail or telephone solicitation	3
Referral from another sperm bank	2
Referral from physicians	5
Other	7

[a] The sample is the sperm bank sample

[b] The code number of the question in the survey instrument (see app. B)

[c] Answers not mutually exclusive

[d] Responses are not weighted. Not all sperm banks answered all questions.

SOURCE: Office of Technology Assessment, 1988

Because sperm banks are most often located in or near universities and hospitals, their inventories are characteristically dominated by donors who live or work in these areas. All the facilities mentioned that their inventories contain samples from students (undergraduate, graduate, or medical); in some cases almost 90 percent of a sperm bank's inventory is specimens from students. Other common sources include physicians, hospital personnel, and nonhospital personnel.

A majority of sperm banks claim that their inventories contain an overrepresentation of donor characteristics such as "college or graduate degree holder" (12 of 15), "better than average IQ" (8 of 15), and "better than average occupational status/achievements" (7 of 15) (table 3-4) (see box 3-C). There is, however, an "about normal" representation of religious groups or nationalities, as stated by 12 of 15 banks.

Table 3-4.—Sperm Donor Characteristic Inventory[a]

(Question 14):[b] Are the following characteristics deliberately overrepresented in your inventory, deliberately underrepresented, or about normal?[c]

	Over-represented	Under-represented	About normal	Not sure
College/graduate degree holder	12[c]	0	2	0
Better than average IQ	8	0	5	1
Better than average occupational status/achievements	7	0	6	1
Greater than average height for ethnic group	0	0	12	1
Better than average athlete	1	0	11	2
Better than average looks	4	0	7	2
Better than average artistic ability	0	0	12	2
Member of a particular religious group	0	0	12	2
Member of a particular nationality	1	0	12	1

[a] The sample is the sperm bank sample.

[b] The code number of the question in the survey instrument (see app. B)

[c] Responses are not weighted. Not all sperm banks answered all questions.

SOURCE: Office of Technology Assessment, 1988.

DONOR SCREENING

All the facilities reported they require some form of screening before accepting donors. Out of the 15 banks in the survey, 11 require screening only of men whose semen is to be used for

Box 3-C.—The Repository for Germinal Choice

Escondido, CA, is home to one of the only sperm banks known to specialize in offering semen samples from unusually well educated donors. Erroneously known as the "Nobel Prize Winners' Spermbank," the Repository for Germinal Choice in fact does not have any specimens from such prize winners. Rather, its inventory largely consists of men who have impressed the sperm bank's director, retired optometrist Robert Klark Graham, with their reported accomplishments, primarily in the "hard" sciences. One donor is an accomplished athlete.

The staff is small, consisting of Dr. Graham, his assistant Ms. Vaux, and one to two physicians retained when needed. From its opening in 1979 through the end of 1986, the Repository had recorded 35 births resulting from its services. There has been no formal study of the children.

Donors are solicited by letter or telephone by the Repository. If they choose to participate, they are asked to complete a lengthy questionnaire concerning their health, genetic histories, and personal accomplishments. Evidence of serious genetic disorders in the family result in exclusion. So too does evidence of the potential donor's own homosexuality, or a strong family history of homosexuality. If accepted to this point, donors are asked to see a local physician, who is to do a physical examination and blood tests, although as of December 1986 no blood test for HIV infection was required; direct semen tests were preferred. Direct semen testing is not reliable.

If physicians retained by the Repository are satisfied by the test results, a donor is accepted. It is not necessary to travel to Escondido in order to donate a specimen. The donor is supplied with instructions, express post packages, and liquid nitrogen storage tubes. No compensation is offered for the samples.

Recipients are not sought, but are chosen from those who contact the Repository by telephone or letter. They are screened almost as rigorously as donors for evidence of disease or genetic disorders. Single or lesbian women are not accepted. If a recipient is approved, she is given samples at no charge. The Repository is financed by the "Foundation for the Improvement of Man," rather than by user fees.

SOURCE: R.K. Graham, Director, Repository for Germinal Choice, Escondido, CA, personal communication, Dec. 30, 1986.

Table 3-5.—Donor and Client Depositor Screening[a]

(Question 21):[b] Prior to acceptance as a donor, do you normally require the following from heterologous donors only, homologous donors only, both, or neither?[c]

	Heterologous[d]	Homologous[e]	Both	Neither
Family medical and genetic history	13	0	2	0
Personality assessment	13	0	0	2
Personal medical history	11	0	4	0
Physical examination	10	0	2	2
Fertility history	8	0	5	2
Karyotyping	5	0	0	9

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "Heterologous" donors are those whose semen will be used for artificial insemination by donor.
[e] "Homologous" donors are client depositors whose semen will be used by them at some future time for artificial insemination by husband.

SOURCE: Office of Technology Assessment, 1988.

anonymous donation; the remaining 4 always require screening, whether the semen is to be used for AIH or AID (table 3-5). Although all the facilities require some sort of testing, **the nature and extent of the tests vary**. All the banks require a donor's personal and family medical history, as well as his genetic history. In addition, a donor's fertility history, a physical examination, and a personality assessment are required by 13 of the 15 banks. Over two-thirds of the facilities have rejected a man whose semen was to be used for AID because he had a history of serious genetic disorders, was over 40 years old, or showed evidence of alcohol abuse. Other reasons for rejection encountered by a majority of facilities have been hepatitis infection, HIV infection, psychological immaturity, low intelligence quotient, lack of education, or evidence of risk factors for HIV infection (table 3-6).

Table 3-6.—Criteria for Rejection: Donors [a]

(Question 24):[b] Have you ever rejected a donor because he was/has:[c]

	Have rejected homologous donor [d]	Have rejected heterologous donor [e]	Have never rejected for this reason
History of serious genetic disorders	0	12	0
Over 40 years old	0	11	2
Evidence of alcohol abuse	0	10	3
Genital herpes	1	9	2
Hepatitis	1	9	3
Evidence of drug abuse	0	9	2
Less than 18 years old	0	9	3
HIV (HTLV) positive	2	8	3
Psychologically immature	1	8	3
Homosexual contacts	0	8	3
Less than average intelligence	0	8	3
Less than high school degree	1	7	5
Multiple heterosexual partners	0	7	6
Sexual contact with AIDS cases	0	7	4
Cytomegalovirus	1	6	7
Gonorrhea	1	6	4
Intravenous drug use	0	6	5
Syphilis	1	5	6
Criminal record	0	5	6
Evidence of child abuse	0	4	7
Welfare dependent	0	3	8
Less than average height	0	3	10
Residence in high AIDS area	0	2	10
Married	0	1	10

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "Homologous" donors are client depositors whose semen will be used by them at some future time for artificial insemination by husband.
[e] Heterologous" donors are those whose semen will be used for artificial insemination by donor.

SOURCE: Office of Technology Assessment, 1988.

In addition to heritable diseases or HIV infection, the following donor characteristics would lead to donor rejection by at least 7 sperm banks: "less than 18 years old," "over 40 years old," "psychological immaturity," "less than average intelligence," "less than high school degree," "evidence of drug abuse," "evidence of alcohol abuse," "homosexual contacts," and diseases such as hepatitis or genital herpes.

It is interesting to note that sperm banks report rarely, if ever, rejecting men who store semen for future use in AIH, despite histories of child, alcohol, or drug abuse. These conditions are the basis for frequent rejection of recipient requests for artificial insemination (see ch. 2).

Thirteen sperm banks screen donors for genetic defects or diseases that tend to be of ethnic origins, such as Tay-Sachs disease (in Jewish donors), sickle cell anemia (in black donors), and thalassemia (in donors of Mediterranean origins). Twelve banks reported that they perform diagnostic testing for a range of sexually transmitted diseases, including syphilis, gonorrhea, and herpes.

All 15 sperm banks reported that they screen donors for antibodies to human immunodeficiency virus, regardless of whether their semen is intended for use in artificial insemination by husband or by donor. One facility would screen for HIV only if the donor were considered to be from a high-risk group; the other 14 banks routinely screen all donors for HIV, regardless of supposed risk group status. All 15 banks use diagnostic testing, rather than reliance on a donor's personal statement, to screen for exposure to the virus. Part of the screening procedure for HIV antibodies often involves the routine quarantine of samples so that the donors may be periodically retested to see if the virus is present later. **If a donor tests negative to the presence of HIV antibodies, 13 banks quarantine the sample pending further donor testing, which will occur, on average, every 1.9 months but which may range anywhere from every 1 to 6 months.** Current American Association of Tissue Banks (AATB) standards for sperm banking require a minimum 3-month quarantine, and American Fertility Society, Centers for Disease Control, and Food and Drug Administration guidelines recommend 6-month quarantines, as noted in chapter 2.

In the event that a donor tests positive for HIV, every bank surveyed reported it would notify the donor of the test results. The 12 banks that responded to questions concerning HIV testing and semen storage for AIH differed on whether to inform the spouse or partner of a man who tests positive for HIV and other infectious diseases (table 3-7). Three banks claimed they would inform the spouse if the donor tests positive for HIV, 4 said they would not inform the spouse, and 5 were "not sure." Of the 14 banks that responded to the same question regarding HIV testing of men offering to become anonymous sperm donors, 7 banks reported that they "would inform," 5 claimed that they "would not inform," and 2 were "not sure" (table 3-8). So far, 8 banks report that they have already rejected someone as an anonymous donor because he tested positive for the HIV antibody, and 2 banks have refused to store semen from an HIV-positive man (table 3-6). In addition, 7 banks reported rejecting donors because of indicated "multiple heterosexual partners" or "sexual contact with HIV cases."

To determine which heritable characteristics would disqualify a donor, the survey asked sperm banks to report whether they would accept a donor with a particular disorder, reject a donor who has it, or reject a donor whose family history includes someone with the disorder (table 3-9). **In general, the survey found that sperm banks are reluctant to accept donors with even a family history of genetic disorders, including those that are correctable, avoidable, or socially tolerated.** In a number of cases, a majority of sperm banks would reject donors with family histories of disorders that are not widely recognized as predominately genetic.

In addition, a number of sperm banks would reject donors with family histories of hemophilia or Duchenne's muscular dystrophy but who were themselves healthy, despite the fact that the diseases are sex-linked and therefore cannot be passed on by a man not himself suffering from it (table 3-9).

Sperm banks also frequently screen out healthy donors with family histories of Tay-Sachs disease, sickle cell anemia, or thalassemia. These autosomal recessive disorders are identifiable by biochemical testing. Sperm banks could

Table 3-7.—Informing Spouse of Homologous Donor of Donor's Health Status[a]

(Question 31a):[b] Would you inform the wife or partner of a *homologous* donor, if tests indicated that the donor had:[c,d]

	Would inform	Would not inform	Not sure
HIV positive	3	4	5
ARC[e] or full-blown AIDS	3	4	5
Other infectious disease	4	3	5
High risk of severe genetic defect for offspring	5	2	5

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "Homologous" donors are client depositors whose semen will be used by them at some future time for artificial insemination by husband.
[e] "ARC" is AIDS-related complex, a collection of diseases suffered in conjunction with HIV-infection.

SOURCE: Office of Technology Assessment, 1988.

Table 3-8.—Informing Spouse of Heterologous Donor of Donor's Health Status[a]

(Question 31b):[b] Would you inform the wife or partner of a *heterologous* donor, if tests indicated that the donor had:[c,d]

	Would inform	Would not inform	Not sure
ARC[e] or full-blown AIDS	8	5	1
High risk of severe genetic defect for offspring	8	4	2
HIV positive	7	5	2
Other infectious disease	7	4	3

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "Heterologous" donors are those whose semen will be used for artificial insemination by donor.
[e] "ARC" is AIDS-related complex, a collection of diseases suffered in conjunction with HIV-infection.

SOURCE: Office of Technology Assessment, 1988.

Table 3-9.—Medical Conditions and Donor Rejection [a]

(Question 25):[b] For each of the following conditions, would you be likely to reject a heterologous donor only if he had the condition, if anyone in the donor's immediate family had the condition, or would you not reject a donor even if he had the condition?[c,d]

	Reject only if donor has[e]	Reject if family history	Not reject even if donor has
Tay-Sachs[f]	5	11	1
Diabetes	11	8	0
Hemophilia	6	13	0
Depression	8	9	2
Asthma	7	6	5
Cystic fibrosis	5	14	0
Mental retardation	6	13	0
Obesity	6	6	5
Huntington's chorea	5	14	0
Duchenne muscular dystrophy	5	14	0
Sickle cell anemia	6	11	0
Thalassemia	6	11	0
Hypercholesterolemic heart disease	6	12	1
Neurofibromatosis	4	14	0
Malignant melanoma	6	8	1
Alzheimer's disease	3	12	2
Severe astigmatism	7	5	3

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "Heterologous" donors are those whose semen will be used for artificial insemination by donor.
[e] Responses not mutually exclusive.
[f] Items in order as on survey instrument.

SOURCE: Office of Technology Assessment, 1988.

do such testing to limit the potential donors rejected to those who actually carry the trait, but this survey indicates that a number of banks screen out all at-risk donors on the basis of a family history. Some autosomal recessive disorders, such as cystic fibrosis, have no reliable carrier test, and all but one surveyed sperm bank would exclude donors with a family history of this most common of genetic disorders among American caucasian children. Fourteen of 15 sperm banks also excluded potential donors with a family history of Huntington's chorea, which, due to its late onset and complicated carrier status diagnosis, is difficult to detect. (This can be compared to the two-thirds of individual physicians who responded that they would screen out a donor with a family history of Huntington's.) As an autosomal dominant, the disorder can be passed on to a child even if only one parent carries the trait.

It is interesting to note three disorders that would not disqualify a donor at 20 to 30 percent of the banks. One, severe astigmatism, is probably heritable, and tolerance for donors with the condition may reflect its prevalence and the public's comfort with corrective lenses. Family history of obesity would lead 6 of the banks to reject a donor, but 5 would accept a donor even if he were himself obese. There is widespread suspicion that some individuals have a genetic predisposition to obesity, but environmental factors make it impossible at this time to state with certainty the precise genetic relationship. Asthma was another trait that would cause rejection at some banks and not at others. Some forms of asthma are autosomal dominant, although its genetic transmission is complex, and environmental factors may make the symptomatology vary greatly. Therefore, it is interesting that 5 of the banks would accept a donor who himself suffered from the disease.

RECORDKEEPING

At least 11 of the 15 sperm banks keep detailed records for each donor, which often includes information such as the number of women inseminated, number of pregnancies achieved, number of children born, the donor's physical examination, the donor's family genetic history, and any followup examinations of the donor. **The majority of facilities will not allow offspring, recipients, recipients' partners, or the donors themselves access to these records** (table 3-10).

Partial access, however, such as providing donor records without the donor names, is granted by some banks. Although a few will permit access without donor names to the donor (3 of 15) or to offspring (2 of 15), recipients and their partners are more likely to be able to obtain these records

(5 to 7 of 15). Public health departments, researchers, and courts are most likely to be able to obtain nonidentifying records.

Table 3-10.—Access to Donor Records[a]

(Question 37):[b] Would you permit access to donor records, including the name of the donor, only excluding the name of the donor, or not at all, to: [c]

	Access with name	Access without name	No access
Research scientists	0	8	5
Public health department	1	7	5
Recipient	0	7	7
Judicial requests	2	6	5
Recipient partner	0	5	9
Donor	2	3	9
Offspring of insemination	1	2	11

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.

SOURCE: Office of Technology Assessment, 1988.

QUALITY ASSURANCE

The sperm banks surveyed have generally adopted professional guidelines and procedures as part of their protocols for artificial insemination, with most using those set forth by the American Association of Tissue Banks (see box 3-D) or the American Fertility Society. Members of the AATB are bound by their standards of practice.

Despite adherence to professional guidelines, 4 banks indicated that the current practice of artificial insemination does not sufficiently protect the safety of the recipient or the rights of the offspring (table 3-11). Six said that there is "less than adequate" protection of physicians in terms of their liability for the practice of artificial insemination. Thirteen, however, regarded protec-

Box 3-D.—AATB Standards of Sperm Bank Practice

The American Association of Tissue Banks publishes and periodically revises its *Standards for Tissue Banking*, including special addendum material from AATB's Reproductive Council concerning semen banking.

As of 1988, AATB directed its member sperm banks to maintain complete donor records, but to ensure that the donor's actual identity never be revealed. Donor selection requires a personal, physical, sexual, and genetic history of the individual. Abuse of alcohol or drugs is grounds for automatic rejection. So are a variety of genetic conditions present in the donor or his family, including mental retardation (unless of intrauterine or environmental origin), diabetes before age 50 in a first- or second-degree relative, heart disease before age 50 in a first- or second-degree relative, schizophrenia or manic depressive disorder in a first-degree relative, muscular dystrophy (unless a known dominant with full penetrance or sex-linked), and "any medical problem which has a possible genetic etiology." The AATB directs member banks to do a mimimum of two-generation (and preferably three-generation) family history for its genetic screening, with biochemical tests done when indicated by a family history of such diseases as Tay-Sachs and thalassemia.

Semen is to be tested for sperm count, motility, morphology, and other indicators of fertility. It is also to be tested for evidence of gonorrhea, and donors' blood is to be tested for syphilis, hepatitis, and human immunodeficiency virus antibodies. No donor semen may be used until after a 3-month quarantine period at the end of which the donor has been rechecked for HIV antibodies. Retesting for hepatitis and syphilis is also required for long-term, repeat donors.

SOURCE: American Association of Tissue Banks, *Standards for Tissue Banking* (Arlington, VA: 1988).

Table 3-11.—Adequacy of Professional Standards[a]

(Question 41):[b] How adequate do you think that present professional practices of artificial insemination are in terms of protecting the:[c]

	More than adequate	Adequate	Less than adequate
Donor's privacy	2	11	1
Offspring's rights	2	8	4
Recipient's safety	1	9	4
Physician's liability	1	7	6

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B)
[c] Responses are not weighted. Not all sperm banks answered all questions.

SOURCE: Office of Technology Assessment, 1988

Table 3-12.—National Standards for Sperm Banks[a]

(Question 43):[b] Would you tend to favor or oppose the establishment of national standards for artificial insemination for:[c]

	Favor	Oppose
Donor screening	14	1
Recordkeeping requirements	13	2
Recipient screening	11	4

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B)
[c] Responses are not weighted.

SOURCE: Office of Technology Assessment, 1988

tion of the donor's privacy as adequate or more than adequate.

Establishing national standards (unspecified as voluntary or mandatory) for donor insemination would be favored by most banks, with 14 supporting national standards for donor screening, 13 favoring standards for recordkeeping, and 11 favoring standards for recipient screening (table 3-12).

Involvement by national medical societies and Federal public health agencies to assure the safety and quality of artificial insemination practice is more favored than involvement by peer review organizations (table 3-13). Practically all the banks wanted the involvement of these two groups either increased or to remain the same. Involvement of State public health agencies also received support from 10 banks. Only about half the facilities supported the involvement of local medical boards, with 4 recommending elimination of such involvement. More than half also favored reducing or eliminating the involvement of hospital professional review organizations. Finally, the involvement of courts evoked a mixed response, with 8 recommending elimination, and 7 recommending that it remain the same.

ATTITUDES

Those responding for the sperm banks generally disapproved of facilities that specialize in donors with intellectual, artistic, or athletic gifts, despite the fact that their own donor pools and screening processes tend to overrepresent educational attainment (table 3-14). **They did, however, split evenly on screening recipients for social characteristics, such as marital status or sexual orientation**. A smaller proportion of sperm banks than of physicians (see ch. 2) viewed self-insemination as a reasonable alternative to physician-assisted insemination. Like physicians, however, they overwhelmingly believed that children conceived by AID should not be permitted to know the identity of their genetic fathers.

Table 3-13.—Roles in Quality Assurance [a]

(Question 42):[b] For each of the following agencies, would you like to see their involvement in the quality assurance of artificial insemination procedures increased, remain the same, decreased, or eliminated?[c]

	Increased	Remain the same	Decreased	Eliminated
National medical societies	6	8	1	4
Federal public health agencies	2	10	2	1
State public health agencies	2	8	1	4
Local medical boards	1	7	3	4
Hospital PROs[d]	1	5	1	7
Courts	0	7	0	8

[a] The sample is the fertility society sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] "PROs" are peer review organizations.

SOURCE: Office of Technology Assessment, 1988.

Table 3-14.—Attitudes Toward Artificial Insemination Practice[a]

(Question 46):[b] How do you feel about the following general statements concerning artificial insemination? For each statement, please indicate whether you agree strongly, agree somewhat, disagree somewhat, or disagree strongly.[c]

	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly
Artificial insemination should be more widely used to treat infertility[d]	5	8	1	0
Physician acceptance of recipients should be based solely on health issues	5	1	5	3
Self insemination is a reasonable alternative to physician assisted insemination in many cases	1	2	3	8
Patient requests for artificial insemination should be honored regardless of marital status or sexual orientation	4	4	4	3
Offspring of artificial insemination should have a right to communicate with their genetic fathers	0	0	1	14
Patient requests for artificial insemination frequently raise moral issues for physicians	1	9	2	3
There is nothing wrong with sperm banks which specialize in donors with intellectual, artistic, or athletic gifts	1	2	5	7

[a] The sample is the sperm bank sample.
[b] The code number of the question in the survey instrument (see app. B).
[c] Responses are not weighted. Not all sperm banks answered all questions.
[d] Items in order as on survey instrument.

SOURCE: Office of Technology Assessment, 1988.

Appendixes

Appendix A

Study Procedures

QUESTIONNAIRE DEVELOPMENT

A survey questionnaire was developed by the contractor in concert with OTA according to the detailed research objectives set forth by OTA. OTA staff, along with the OTA advisory panel and specially selected outside experts, reviewed the draft questionnaire. A final pretest version of the questionnaire incorporated the suggestions and criticisms of the advisory panel and outside experts.

The survey instrument was pretested among 30 physicians in April 1987. The findings of the pretest concerning areas of difficulty or confusion for the respondent were used to revise the questionnaire. This revised questionnaire was approved by OTA on June 5, 1987, as the final version of the instrument. An amended version of the survey instrument was used for the survey of sperm bank practice.

SAMPLED POPULATIONS

Cross-Sectional Sample

In order to generate sample estimates that could be projected to the total population of U.S. physicians who conduct artificial insemination, a national cross-sectional sample was drawn from the universe of currently practicing physicians whose primary specialty was likely to include some infertility therapy, based on the American Medical Association (AMA) physician listings. The target population was primary care physicians likely to become involved in infertility therapy – those in general practice and family practice or in reproductive care specialties (gynecology, obstetrics/gynecology, and urology). These specialties could be sampled from the AMA sampling frame, which allows classification according to both primary and secondary specialties. The sampling frame included both office-based and hospital-based physicians; however, interns and residents were excluded.

A proportionate sampling of the population (see table A-1) would have led to relatively small sample sizes for some specialties most likely to treat fertility problems. Hence, it was decided to sample the four specialties disproportionately, to yield 1,600 cases for the cross-sectional sample of physicians, of whom 1,575 were actually sampled.

Table A-1.—Distribution of Physicians by Specialty

Specialty	Population	Proportion	Sample size
General practice	25,807	24.2	388
Family practice	43,221	40.6	650
Gynecology/obstetrics .	28,511	26.8	428
Urology	8,944	8.4	134
Total	106,483		1,600

SOURCE: American Medical Association Physician Listings, 1987

Fertility Society Sample

Given the anticipated low physician involvement in artificial insemination and fertility treatment, this cross-sectional approach was not expected to yield a large enough sample of practitioners to permit detailed analysis. A second sampling frame was therefore constructed from the membership lists of two national professional societies, the American Fertility Society (AFS) and the American Society of Andrology. The memberships of the two organizations are currently estimated at 11,000 and 1,000, respectively.

A prior screening of the AFS membership for fertility practices had been conducted by the association between October 1984 and March 1985. A total of 8,500 survey forms had been mailed to members and 3,200 had been returned. Among those returned, 2,736 physicians reported some practice of artificial insemination – either by donor (AID) or by husband (AIH) or both. This prescreened sample of AFS members who had identified themselves as providing artificial insemination services of any kind was used as part of the sampling frame of fertility specialists. Since no such prescreening information was available for the Andrology Society membership, the full membership list was used as the basic sampling frame.

The total size of the sample drawn of fertility specialists was 1,213. This included 1,000 from the AFS prescreened sample and 213 from the Andrology Society lists.

Sperm Bank Sample

A list of 30 separately owned or operated commercial sperm banks in the United States was developed by OTA on the basis of most current lists from the American Fertility Society and the American Association of Tissue Banks. All sperm banks were contacted with the same double mailing approach used for the physician survey. Fifteen sperm banks responded, a response rate of 50 percent. Some responses were somewhat incomplete.

SAMPLING METHOD

For all three physician samples, selection of sample within stratum was by simple random sampling, a method of selecting n units out of the N such that every one of the distinct elements has an equal chance of being drawn. A simple random sample is drawn sequentially in practice. At any point in the draw there must be an equal chance of selection for any element in the population not already drawn.

Simple random sampling has the distinct advantage of reducing the variance of sample estimates, under most circumstances, compared with the alternative of stratified cluster sampling. Statistical formulas for specifying the sampling precision associated with particular sample sizes are based upon the assumption of simple random sampling. Cluster samples introduce a design effect into these calculations, which normally increases the expected sampling error relative to that which would have been obtained.

Simple random sampling is done by systematically selecting every "ith" person in the sampling universe. In this case the "ith" refers to a constant interval, which is determined by the formula: $i = N/n$, where N is the number of elements in the population and n is the desired number of elements in the sample. The elements in the sampling universe are listed in a random order. A computer-generated random number is used to select an initial number between 1 and i to establish a random start. The constant interval "i" is sequentially accumulated until all sampled elements have been designated. This procedure can be demonstrated to be statistically identical to the method whereby individual elements are selected at random without replacement from the population.

FIELD PROCEDURES

The field procedures used in this study were designed to produce an unbiased sample of physicians from the two sampling frames. These procedures included:

- an advance letter sent to all sample respondents indicating that the questionnaire would follow,
- a first mailing of the questionnaire with cover letter,
- a followup letter to individuals whose replies were not received within 4 weeks of the first mailing,
- a second questionnaire mailing approximately 1 week after the followup letter, and
- a telephone followup of nonrespondents among a predesignated 20 percent subset of the sample to find out why the person had not responded.

The survey was conducted between June and August 1987. The schedule for the study did not permit a third mailing, which would have required another month for data collection. The resources available to the study did not permit the use of incentives to increase response rate. Similarly, a telephone followup with all nonrespondents was not possible within the resource limitations of the study.

PARTICIPATION RATES

These procedures yielded a total of 1,558 questionnaires completed and returned by an adjusted sample of 2,569 physicians. The overall response rate was 61 percent: 692 surveys out of an adjusted sample of 1,098 (63 percent) for the members of the fertility society sample, and 866 surveys out of an adjusted sample of 1,471 (59 percent) among respondents in the cross-sectional sample. Broken down by fertility society, 596 surveys out of an adjusted sample of 960 were completed among respondents in the AFS sample (62 percent), and 96 surveys out of an adjusted sample of 138 (70 percent) were completed among respondents in the American Society of Andrology sample (table A-2).

The survey was designed to permit a systematic effort to define the sources of nonresponse on a limited basis. A random sample of one-fifth of the total was predesignated for followup before the field work began. As the field period ended, all outstanding cases from this sample were contacted in an attempt to learn why they were not responding. No attempt was made to administer the survey over the telephone or to collect demographics; rather, the telephone followup aimed to identify any source of systematic bias in the achieved sample.

Roughly 35 percent of the contacted nonrespondents reported that they had already completed the survey and just recently returned it by mail, that they intended to reply, or that they were in the process of replying as of the date of the telephone followup call. It seems that additional prodding, in the form of the followup call, actually improves overall response rates, as indicated by this high "will reply" response (table A-3). This also suggests that a third-wave mailing might have produced a higher response rate, possibly 70 percent.

A large percentage of the nonresponses involved those who were unreachable at the time of the followup call. Almost 25 percent of the nonresponse sample were on vacation, not at home, or otherwise unreachable at the time.

Another important cause for nonresponse is straightforward refusal to participate in the survey. Roughly 15 percent of the nonresponse sample refused to participate for a variety of reasons, most of which involved the length and/or complexity of the survey instrument or the respondents' actual time available to complete the survey. The construction of the survey did not seem to be a factor in nonresponse, with only a few respondents citing this as a reason for refusal. A few physicians cited issues of privacy, lack of incentive or benefit in completing the survey, or a policy of refusal to participate in surveys.

Other sources for nonresponse include those "ineligible" for a variety of reasons, such as those no longer practicing, those no longer at the prestated location who left no forwarding address, and those deceased. Ineligibility accounted for

Table A-2.—Sample Disposition

	Cross-section	AFS	Andrologists
Total sampled	1,575	1,000	213
Ineligible	76	15	47
No infertility work	26	5	2
Not a practicing MD	9	1	43
Moved out of U.S.	0	1	0
Deceased	2	1	1
Retired	37	5	0
Other misc.	2	2	1
Bad address/no forwarding	28	25	28
Adjusted sample	1,471	960	138
No return	584	335	38
Remails	3	62	0
No reply	578	232	38
On vacation	3	0	0
New address from AFS	0	32	0
Not listed by AFS	0	9	0
Refused	21	29	4
Completes received	866	596	96
>4 inseminations	37	361	24
0-3 inseminations	819	231	71
Unspecified	10	4	1
Completes used in analysis	827	569	77
>4 inseminations	36	346	21
Others	791	223	56
Completes received too late	39	27	19

SOURCE: Office of Technology Assessment, 1988.

30 percent of the nonresponse for the preselected group derived from the Andrology Society sample, but accounted for no more than 8 percent of those preselected respondents from the AFS and the cross-sectional samples. Overall, the followup contact did not reveal any underlying problem of sample bias among nonrespondents.

DIFFERENTIAL RESPONSE RATES AND SAMPLE WEIGHTING

Differential response rates by physician speciality and professional society membership can produce some sample distortion from true population distribution. Further, for the cross-sectional sample, the sample drawn was not representative of true population distribution for the four sampled fields of medical practice. To correct for such biases, the distribution of the achieved sample was compared with the actual distribution by specialty and society for these groups, and sample weights were applied to correct for differences.

PRECISION OF SAMPLE ESTIMATES

The objective of the sampling and field procedures is to produce an unbiased sample of the target population, one that shares the same properties and characteristics of the total population from which it is drawn, subject to a certain level of sampling error. This means that with a properly drawn sample, statements can be made about the properties and characteristics of the

Table A-3.—Phone Results of Telephone Followup Among Outstanding Cases in Predesignated Followup Sample

	Cross-section	AFS	Andrologists
Total sampled	316	201	43
Outstanding cases	144	107	14
Survey is in the mail	9	9	1
Will reply/in the process	29	24	2
Remails	31	11	2
Remail to new address	9	5	1
Need new copy (same address)	13	1	0
Have not received (same address)	9	5	1
Ineligible	10	2	4
Screen out	9	0	2
No longer at location	1	2	1
Deceased	0	0	1
Not reached	22	24	3
On vacation	3	9	0
Call back for doctor	12	14	2
No answer/busy	2	1	1
Left message on answering machine	5	0	0
Have not called	30	21	0
Insufficient time since last remail of survey	0	11	0
Wrong telephone number	1	1	0
Tel. number not listed	25	9	0
Tel. number unpublished	4	0	0
Refusals			
Survey is too long/complex	2	5	0
Do not have time	4	5	0
Survey is poorly constructed	0	2	1
No benefit in doing survey	1	0	0
Privacy/no reason for info requested	1	0	0
Mad at government/lower taxes, etc.	2	0	0
Doctors should be paid	1	0	0
Do not do surveys	1	0	0
Other/unspecified reason	1	3	0
Request remail - too late to comply	0	0	0
Duplicate/same clinic (won't reply)	0	1	1
Completed surveys	30	22	3
Adjusted sample	104	83	9

SOURCE: Office of Technology Assessment, 1988

total population within certain specified limits of certainty and sampling variability.

The expected sampling error for sample estimates of population proportions, using simple random sampling without replacement, is calculated by the following formula:

$$\mathrm{var}(x) = (z)\left(\frac{\sqrt{p(q)}}{n-1}\right)$$

where:

var (x) = the expected sampling error of the mean of some variable, expressed as a proportion;
p = some proportion of the sample displaying a certain characteristic or attribute;
q = (1 - p);
z = the standardized normal variable, given a specified confidence level; and
n = the size of the sample.

The maximum expected sampling error at the 95 percent confidence level (i.e., in 95 out of 100 repeated samples) for a total physician sample of 827 (the cross-section) is +/- 3.4 percentage points. It should be noted that the maximum sampling error is based upon a certain response distribution (i.e., a 50/50 split). The expected sampling error is less for other response distributions with a sample size of 827. For example, the estimate that 9.6 percent of a sample of 827 physicians have accepted patients for artificial insemination in the past year is subject to an expected sampling error of +/- 2.0 at the 95-percent confidence level. However, as sample size declines, as in the case of subsamples of the total physician sample, so too will the expected sampling precision of the estimates. Table A-4 presents the expected size of the sampling error for specified sample sizes of 1,500 and less, at different response distributions on a categorical variable. This table may be used to project the estimated precision of sampling estimates for the total sample and naturally occurring subsets of the sample, e.g., particular medical specialties, number of years in practice, and so on.

Table A-4.—Expected Sampling Error (plus or minus) at the 95 Percent Confidence Level (simple random sample)

Size of sample or subsample	Percentage of the sample or subsample giving a certain response or displaying a certain characteristic for percentages near:[a]				
	10 or 90	20 or 80	30 or 70	40 or 60	50
1,500	1.5	2.0	2.3	2.5	2.5
1,300	1.6	2.2	2.5	2.7	2.7
1,200	1.7	2.3	2.6	2.8	2.8
1,100	1.8	2.4	2.7	2.9	3.0
1,000	1.9	2.5	2.8	3.0	3.1
900	2.0	2.6	3.0	3.2	3.3
800	2.1	2.8	3.2	3.4	3.5
700	2.2	3.0	3.4	3.6	3.7
600	2.4	3.2	3.7	3.9	4.0
500	2.6	3.5	4.0	4.3	4.4
400	2.9	3.9	4.5	4.8	4.9
300	3.4	4.5	5.2	5.6	5.7
200	4.2	5.6	6.4	6.8	6.9
150	4.8	6.4	7.4	7.9	8.0
100	5.9	7.9	9.0	9.7	9.8
75	6.8	9.1	10.4	11.2	11.4
50	8.4	11.2	12.8	13.7	14.0

[a] Entries are expressed as percentage points (+ or -)

SOURCE: Office of Technology Assessment, 1988

ESTIMATING STATISTICAL SIGNIFICANCE

The estimates of sampling precision presented in the preceding section yield confidence bands around the sample estimates, within which the true population value should lie. This type of sampling estimate is appropriate when the goal of the research is to estimate a population distribution. When the goal is to compare the survey responses between two or more populations, however (i.e., to determine whether the characteristics of two populations are different), it is necessary to consider whether differences observed between the samples are statistically significant (i.e., beyond the expected limits of sampling error for both sample estimates).

To test this, a rather simple calculation can be made. Call the total sampling error (i.e., var (x) in the previous formula) of the first sample s1 and the total sampling error of the second sample s2. The sampling error of the difference between these estimates is sd, which is calculated as:

$$sd = \sqrt{s1^2 + s2^2}$$

Any difference between observed proportions that exceeds sd is a statistically significant difference at the specified confidence interval. Note that this technique is mathematically equivalent to generating standardized tests of the difference between proportions.

An illustration of the pooled sampling error between subsamples for various sizes is presented in table A-5.

Table A-5.—Pooled Sampling Error Expressed As Percentages for Given Sample Sizes
(assuming $p = q$)

Sample size											
2,000	10.0	7.2	6.1	5.4	4.9	4.6	4.3	4.1	4.0	3.8	3.1
1,000	10.3	7.6	6.5	5.8	5.4	5.1	4.9	4.7	4.5	4.4	
900	10.3	7.6	6.6	5.9	5.5	5.2	5.0	4.8	4.7		
800	10.4	7.7	6.7	6.0	5.6	5.3	5.1	5.0			
700	10.5	7.8	6.8	6.1	5.8	5.4	5.2				
600	10.6	8.0	7.0	6.3	5.9	5.7					
500	10.7	8.2	7.2	6.6	6.2						
400	11.0	8.5	7.5	6.9							
300	11.3	9.0	8.1								
200	12.0	9.8									
100	13.9										
Sample size	100	200	300	400	500	600	700	800	900	1000	2000

SOURCE: Office of Technology Assessment, 1988

Appendix B

Survey Instrument: Physician Practice

QUESTIONNAIRE:__________ [1-5]

NATIONAL INFERTILITY SURVEY 6-1

PLEASE READ THE QUESTION AND MARK THE SPACE BELOW THE QUESTION THAT MOST NEARLY CORRESPONDS TO YOUR ANSWER. AFTER EACH ANSWER CONTINUE WITH THE NEXT QUESTION UNLESS THERE IS AN INSTRUCTION TO SKIP TO A PARTICULAR QUESTION. EVERYONE SHOULD ANSWER THE QUESTIONS ON PAGES 16 AND 17

1a. As part of your practice, would you provide infertility services or treatment for infertility?

No.............................._____-1 (SKIP TO Q.2a) [7]
Yes............................._____-2

1b. In the past twelve months, approximately how many patients have you treated for infertility problems?

__ __ __ Number treated [8-10]

1c. Which of the following types of infertility therapies would you perform as part of your practice?

	No	Yes	
Fertility drug therapy....................	_____-1	_____-2	[11]
Surgical therapy..........................	_____-1	_____-2	[12]
In vitro fertilization/embryo transfer.....	_____-1	_____-2	[13]
Gamete intrafallopian transfer............	_____-1	_____-2	[14]
Surrogate mother matching.................	_____-1	_____-2	[15]
Artificial insemination from husband.......	_____-1	_____-2	[16]
Artificial insemination from donor.........	_____-1	_____-2	[17]

2a. In the past twelve months how many requests have you received for artificial insemination, including requests for insemination with either husband or donor sperm.

__ __ __ Requests for artificial insemination [18-20]

None............................_____-0 (SKIP TO PAGE 16) [21]

2b. How many patients have you accepted for artificial insemination, with either husband or donor sperm, in the past twelve months?

__ __ __ Number accepted [22-24]

None............................_____-0 [25]

2c. What is the main reason you have not accepted any requests for artificial insemination in the past year?

[26-27]

____

[28-29]

____

[30-31]

IF FOUR OR MORE PATIENTS HAVE BEEN ACCEPTED FOR ARTIFICIAL INSEMINATION IN THE PAST YEAR, PLEASE CONTINUE ON NEXT PAGE. IF THREE OR FEWER, GO TO PAGE 16.

GENERAL CHARACTERISTICS

3a. How many requests for artificial insemination have you turned down in the past year, if any?

___ ___ ___ Number turned down [32-34]

-------- None..............._____-0 (SKIP TO Q.4a) [35]

3b. Could you describe the main reason(s) that you did not accept certain requests for artificial insemination?

[36-37]

____ [38-39]

____ [40-41]

4a. What proportion of the patients who have requested artificial insemination in the past year were:

Married couples.................___ ___ ___% [42-44]
Unmarried couples (heterosexual)..___ ___ ___% [45-47]
Unmarried couples (lesbian).......___ ___ ___% [48-50]
Females without a partner ....___ ___ ___% [51-53]
Don't know marital status.........___ ___ ___% [54-56]

4b. What proportion of patients whom you accepted for artificial insemination in the past year sought artificial insemination because of:

No male partner...................___ ___ ___% [57-59]
Impotence of male partner.........___ ___ ___% [60-62]
Infertility of male partner.......___ ___ ___% [63-65]
Genetic disorder of male partner...___ ___ ___% [66-68]
Rh Incompatibility of male partner.___ ___ ___% [69-71]
Exposure of male partner to mutagens...........................___ ___ ___% [72-74]
Male partner has sexually transmitted disease................___ ___ ___% [75-77]
Other (PLEASE SPECIFY)

--------------------------........___ ___ ___% [78-80]

ST CD 2
DUP 1-5
6-2

4c. What percentage of these requests were from out-of-state patients?

___ ___ ___% [7-9]

None.............................._____-0 [10]

4d. In what proportion of artificial inseminations was the sperm from:

Husband/partner...................___ ___ ___% [11-13]
Donor provided by recipient........___ ___ ___% [14-16]
Donor selected by you..............___ ___ ___% [17-19]
Sperm bank........................___ ___ ___% [20-22]
Other (PLEASE SPECIFY)
______________________________........___ ___ ___% [23-25]

RECIPIENT SCREENING

5. Prior to accepting a patient for artificial insemination, do you normally require that the patient undergo/provide:

	No	Yes	
a. Personal medical history	_____-1	_____-2	[26]
b. Family medical and genetic history	_____-1	_____-2	[27]
c. Fertility history	_____-1	_____-2	[28]
d. Physical examination	_____-1	_____-2	[29]
e. Personality assessment	_____-1	_____-2	[30]
f. Karyotyping	_____-1	_____-2	[31]

6a. Do you ever require special screening for genetic defects or diseases from any patients, prior to accepting them for artificial insemination?

------- No...................._____-1 (SKIP TO Q.6c) [32]
Yes...................._____-2

6b. Under what circumstances do you require special screening for genetic defects or diseases?

____ [33-34]

____ [35-36]

____ [37-38]

6c. Do you require any other diagnostic tests of potential recipients, prior to accepting them for artificial insemination?

------- No......................_____-1 (SKIP TO Q.7) [39]
Yes......................_____-2

6d. Which diagnostic tests do you require in all instances?

____ [40-41]

____ [42-43]

____ [44-45]

6e. Which other diagnostic tests do you require in some instances?

____ [46-47]

____ [48-49]

____ [50-51]

[NEXT PAGE]

RECIPIENT SCREENING

7. Have you ever rejected or would you be likely to reject a request for artificial insemination from a potential recipient because she was/has:

		Have Rejected	Would Be Likely to Reject	Not Likely to Reject	
a.	Less than 18 years old	____-1	____-2	____-3	[52]
b.	Over 40 years old	____-1	____-2	____-3	[53]
c.	Welfare dependent	____-1	____-2	____-3	[54]
d.	Psychologicaly immature	____-1	____-2	____-3	[55]
e.	Unmarried with a partner	____-1	____-2	____-3	[56]
f.	Unmarried without a partner	____-1	____-2	____-3	[57]
g.	Less than high school degree	____-1	____-2	____-3	[58]
h.	Less than average intelligence	____-1	____-2	____-3	[59]
i.	Criminal record	____-1	____-2	____-3	[60]
j.	Evidence of drug abuse	____-1	____-2	____-3	[61]
k.	Evidence of alcohol abuse	____-1	____-2	____-3	[62]
l.	Evidence of child abuse	____-1	____-2	____-3	[63]
m.	Homosexual	____-1	____-2	____-3	[64]
n.	Other living children	____-1	____-2	____-3	[65]
o.	Prior miscarriage	____-1	____-2	____-3	[66]
p.	Medical risks from pregnancy	____-1	____-2	____-3	[67]
q.	History of serious genetic disorders	____-1	____-2	____-3	[68]
r.	Syphilis	____-1	____-2	____-3	[69]
s.	Gonorrhea	____-1	____-2	____-3	[70]
t.	Genital herpes	____-1	____-2	____-3	[71]
u.	Cytomegalovirus	____-1	____-2	____-3	[72]
v.	Chlamydia	____-1	____-2	____-3	[73]
w.	Hepatitis	____-1	____-2	____-3	[74]
x.	HIV (HTLV) positive	____-1	____-2	____-3	[75]

ST CD 3
DUP 1-5
6-3

DONOR SELECTION

8. In what proportion of requests does the recipient (or recipient's partner) have a donor already selected?

__ __ __% [7-9]

9. In what proportion of cases does the recipient ask you to select a donor who meets certain specifications or characteristics?

__ __ __% [10-12]

10. Are you generally willing to select donor characteristics to recipient specifications?

------- No................._____-1 (SKIP TO Q.12a) [13]
Yes................_____-2

11. Which of the following donor characteristics are you normally willing to try to match, if requested:

	Willing	Not Willing	
Age	____-1	____-2	[14]
Height	____-1	____-2	[15]
Weight	____-1	____-2	[16]
Eye color	____-1	____-2	[17]
Hair texture	____-1	____-2	[18]
Complexion	____-1	____-2	[19]
Body type	____-1	____-2	[20]
Race	____-1	____-2	[21]
Ethnic or national origin	____-1	____-2	[22]
Religion	____-1	____-2	[23]
I.Q.	____-1	____-2	[24]
Income	____-1	____-2	[25]
Educational attainment	____-1	____-2	[26]
Special abilities	____ 1	____-2	[27]
Hobbies or interests	____-1	____-2	[28]

12a. Do you offer sperm separation for preconception gender selection?

------ No..............._____-1 (SKIP TO Q.12c) [29]
Yes..............._____-2

12b. What technique for sperm separation do you normally use?

[30-31]

____ [32-33]

12c. What is the main reason you don't offer preconception gender selection?

[34-35]

____ [36-37]

13. In your experience, in what proportion of cases where sex selection is attempted is the selection successful?

__ __ __% [38-40]

Don't Know ____-888

PROTOCOL FOR INSEMINATION

14. How many appointments do you require with a patient, on average, before insemination can take place?

__ __ Appointments [41-42]

15. Do you routinely present other options to patients who request artificial insemination?

------ No.................. _____-1 (SKIP TO Q.17a) [43]
Yes................. _____-2

16. Which other options do you normally present? [44-45]

______________________________ [46-47]

______________________________ [48-49]

[50-51]

17a. Do you routinely present possible risks of artificial insemination to patients who request artificial insemination?

------ No.................. _____-1 (SKIP TO Q.18a) [52]
Yes................. _____-2

17b. Which risks do you normally present? [53-54]

______________________________ [55-56]

______________________________ [57-58]

______________________________ [59-60]

18a. Do you require patients to sign a consent form prior to insemination?

------ No.................. _____-1 (SKIP TO Q.19) [61]
Yes................. _____-2

18b. Do you require both partners of a couple to sign a consent form or only the patient?

Both partners...... _____-1 [62]
Only patient....... _____-2

19. On what day in the menstrual cycle do you normally commence insemination?

______________________________ [63-64]

20. On average, how many inseminations do you usually make per cycle?

__ __ Number [65-66]

PROTOCOL FOR INSEMINATION

21. After the initial insemination within a cycle, do you normally schedule subsequent inseminations in that cycle for every day, every other day or something else?

Only once per cycle..._____-1 [67]
Every day............_____-2
Every other day......._____-3
Other (Specify)

________________......_____-4

22. Normally, is the sperm deposited:

Intravaginally....._____-1 [68]
Cervicovaginally..._____-2
Intrauterinally...._____-3
Cervical cap......._____-4

23a. Do you normally restrict all inseminations of a particular patient to sperm from a single donor, or not?

Use multiple donors.._____-1 [69]
------ Use single donor....._____-2 (SKIP TO Q.23c)
:
: 23b. Do you use sperm from multiple donors for inseminations within the same cycle or not?
:
: Use multiple donor....._____-1 [70]
: Use single donors......_____-2
V

23c. Do you mix the sperm of the spouse/partner with the donor sperm for insemination on a regular basis, only upon request or never?

On a regular basis....._____-1 [71]
Only upon request......_____-2
Never..................._____-3

23d. Prior to insemination, which of the following procedures do you always require as part of the insemination protocol, which do you sometimes require, and which do you not require?

	Always	Sometimes	Never	
Sperm washing................	____-1	____-2	____-3	[72]
Split ejaculate..............	____-1	____-2	____-3	[73]
Bacteriocide...........	____-1	____-2	____-3	[74]

23e. IF SOMETIMES REQUIRE. Under what conditions do you use this procedure?

Sperm washing....________________________________ [75-76]

Split ejaculate..________________________________ [77-78]

Bacteriocide.....________________________________ [79-80]

OUTCOMES

ST CD 4
DUP 1-5
6-4

24. In what percentage of cases that you have treated by artificial insemination do you know whether pregnancy is achieved as a result or not?

___ ___ ___% [7-9]

25. Based on your experience, what is the average number of inseminations needed to achieve pregnancy?

___ ___ ___ Inseminations [10-12]

26. Based on your experience, what is the average number of cycles that it takes for a patient to achieve pregnancy by means of artificial insemination?

___ ___ Cycles [13-14]

27. What proportion of the patients that you have accepted for artificial insemination have achieved pregnancy as a result of the treatment?

___ ___ ___% [15-17]

28. Do you normally follow the full course of the pregnancy for patients successfully inseminated?

------- No.................... ______-1 (SKIP TO Q.30a) [18]
Yes.................... ______-2

29. Approximately what proportion ended in live births?

___ ___ ___ % [19-21]

V

30a. Do you follow the outcomes of live births of patients you have inseminated?

------- No..................... ______-1 (SKIP TO Q.31) [22]
Yes.................... ______-2

30b. How many cases of birth defects have you encountered?

<--------- None....... ____-0 (SKIP TO Q.31) [23]

___ ___ cases with birth defects [24-25]

30c. What was/were the birth defects in those cases?

[26-27]

____ [29-29]

____ [30-31]

V

31. Do you follow the health and development of children from these inseminations subsequent to birth?

No..................... ______-1 [32]
Yes.................... ______-2

FRESH SPERM

32a. Have you performed any artificial inseminations in the past year in which fresh sperm was used?

------- No....................._____-1 (SKIP TO Q.35) [33]
Yes....................._____-2

32b. Approximately how many inseminations have you performed in the past year, using fresh sperm?

__ __ __ Number using fresh sperm [34-36]

33. Do you use the sperm of husbands or partners?

No....................._____-1 [37]
Yes....................._____-2

34. Which of the other following sources have you used to obtain fresh sperm in the past year?

a. Self....................._____-1 [38]
b. Other doctors....................._____-1 [39]
c. Medical students....................._____-1 [40]
d. Graduate students....................._____-1 [41]
e. Hospital personnel....................._____-1 [42]
f. Non-hospital personnel....................._____-1 [43]
g. Andrology laboratories....................._____-1 [44]

DONOR SCREENING PROTOCOL

35. Prior to acceptance as a donor, which of the following do you normally require from donors selected by the recipient (eg. husbands, partners), which do you require from other donors, and which do you require from neither?

	RECIPIENT SELECTED DONOR	OTHER DONORS	DON'T REQUIRE	
a. Personal medical history	____-1	____-2	_____-3	[45]
b. Family medical and genetic history	____-1	____-2	_____-3	[46]
c. Fertility history	____-1	____-2	_____-3	[47]
d. Physical examination	____-1	____-2	_____-3	[48]
e. Personality assessment	____-1	____-2	_____-3	[49]
f. Karyotyping	____-1	____-2	_____-3	[50]

36a. Do you ever require special screening for genetic defects or diseases from any donors, prior to accepting them for artificial insemination?

------- No....................._____-1 (SKIP TO Q.36c) [51]
Yes....................._____-2

36b. Under what circumstances do you require special screening of donors for genetic defects or diseases?

[52-53]

____ [54-55]

____ [56-57]

[NEXT PAGE]

DONOR SCREENING PROTOCOL

36c. Do you require any other diagnostic tests for donors prior to initial acceptance, not counting analysis of sperm?

------- No.......................____-1 (SKIP TO Q.37) [50]
Yes.......................____-2

36d. Which diagnostic tests do you require in all instances?

____ [59-60]

____ [61-62]

____ [63-64]

36e. Which other diagnostic tests do you require in some instances?

____ [65-66]

____ [67-68]

____ [69-70]

V

37. Do you normally require screening of the semen of donors for fertility or not?

-------- Don't require screening....____-1 (SKIP TO Q.40) [71]
Require screening ....____-2

ST CD 5
DUP 1-5
6-5

38. Which of the following criteria do you normally use in screening sperm samples (semen) of donors?

	USE		Q.39 MINIMUM CRITERIA	
Sperm count........................	____-1	[7]	__ __ MILLION	[16-17]
Motility........................	____-1	[8]	__ __ PERCENT	[18-19]
Linearity........................	____-1	[9]	________	[20-21]
Speed........................	____-1	[10]	________	[22-23]
Morphology........................	____-1	[11]	__ __ PERCENT	[24-25]
White blood count................	____-1	[12]	__ __ PHF	[26-27]
Viscosity........................	____-1	[13]	________	[28-29]
Ph........................	____-1	[14]	________	[30-31]
Post-thaw motility................	____-1	[15]	__ __ PERCENT	[32-33]

39. FOR EACH "YES" ABOVE: Would you describe the minimum criteria for acceptance?

V
[NEXT PAGE]

DONOR SCREENING PROTOCOL

40. Have you ever rejected or would you be likely to reject a donor because he was/has:

		Have Rejected	Would Be Likely to Reject	Not Likely to Reject	
a.	Less than 18 years old..................	____-1	____-2	____-3	[34]
b.	Over 40 years old........................	____-1	____-2	____-3	[35]
c.	Psychologicaly immature..................	____-1	____-2	____-3	[36]
d.	Married..................................	____-1	____-2	____-3	[37]
e.	Less than average height.................	____-1	____-2	____-3	[38]
f.	Less than high school degree.............	____-1	____-2	____-3	[39]
g.	Less than average intelligence...........	____-1	____-2	____-3	[40]
h.	Criminal record..........................	____-1	____-2	____-3	[41]
i.	Evidence of drug abuse...................	____-1	____-2	____-3	[42]
j.	Evidence of alcohol abuse................	____-1	____-2	____-3	[43]
k.	Evidence of child abuse..................	____-1	____-2	____-3	[44]
l.	Homosexual contacts......................	____-1	____-2	____-3	[45]
m.	Syphilis.................................	____-1	____-2	____-3	[46]
n.	Chlamydia................................	____-1	____-2	____-3	[47]
o.	Gonorrhea................................	____-1	____-2	____-3	[48]
p.	Genital herpes...........................	____-1	____-2	____-3	[49]
q.	Cytomegalovirus..........................	____-1	____-2	____-3	[50]
r.	History of serious genetic disorders.....	____-1	____-2	____-3	[51]
s.	Hepatitis................................	____-1	____-2	____-3	[52]
t.	HIV (HTLV) positive......................	____-1	____-2	____-3	[53]
u.	Intravenous drug use.....................	____-1	____-2	____-3	[54]
v.	Multiple heterosexual partners...........	____-1	____-2	____-3	[55]
w.	Sexual contact with AIDS cases...........	____-1	____-2	____-3	[56]
x.	Residences in high AIDS area.............	____-1	____-2	____-3	[57]

41. For each of the following conditions, would you be likely to reject a donor only if he had the condition, if anyone in the donor's immediate family had the condition, or would you not reject a donor even if he had the condition?

		Reject Only if Donor Has:	Reject if Family History:	Not Reject Even if Donor Has:	
a.	Tay-Sachs................................	____-1	____-2	____-3	[58]
b.	Diabetes.................................	____-1	____-2	____-3	[59]
c.	Hemophilia...............................	____-1	____-2	____-3	[60]
d.	Depression...............................	____-1	____-2	____-3	[61]
e.	Asthma...................................	____-1	____-2	____-3	[62]
f.	Cystic fibrosis..........................	____-1	____-2	____-3	[63]
g.	Mental retardation.......................	____-1	____-2	____-3	[64]
h.	Obesity..................................	____-1	____-2	____-3	[65]
i.	Huntington's chorea......................	____-1	____-2	____-3	[66]
j.	Duchenne muscular dystrophy..............	____-1	____-2	____-3	[67]
k.	Sickle cell anemia.......................	____-1	____-2	____-3	[68]
l.	Thalessemia..............................	____-1	____-2	____-3	[69]
m.	Hypercholesterolemic heart disease.......	____-1	____-2	____-3	[70]
n.	Neurofibrimatosis........................	____-1	____-2	____-3	[71]
o.	Malignant melanoma.......................	____-1	____-2	____-3	[72]
p.	Alzheimer's disease......................	____-1	____-2	____-3	[73]
q.	Severe astigmatism.......................	____-1	____-2	____-3	[74]

DONOR SCREENING PROTOCOL

ST CD 6
DUP 1-5
S-6

42a. Do you have any limit on the number of patients who can be inseminated from the sperm of the same donor?

-------- No.........____-1 (SKIP TO Q.43a) [7]
Yes........____-2

42b. How many patients will you permit to be inseminated from the sperm of the same donor?

__ __ [8-9]

FROZEN SPERM

43a. Have you performed any artificial inseminations in the past year in which frozen sperm was used?

------- No....................._____-1 (SKIP TO Q.48) [10]
Yes...................._____-2

43b. Approximately how many patients have you inseminated in the past year using frozen sperm?

__ __ __ Number using frozen sperm [11-13]

44. Which of the following sources have you used in the past year to obtain frozen sperm? (CHECK ALL THAT APPLY)

	Have Used	
Own supplies...........................	____-1	[14]
Hospital supplies......................	____-1	[15]
Commercial vendor......................	____-1	[16]
Other (PLEASE SPECIFY)		
______________________________	____-1	[17]

45. Do you use a sperm bank that is located in your state, one that is locate in another state or don't you use a sperm bank? (CHECK ALL THAT APPLY)

Same state	_____-1	[18]
Another state	_____-1	[19]
No sperm bank........	_____-1	[20]

46. Do you or your supplier have a quarantine period prior to use of frozen sperm?

<------ No....................._____-1 (SKIP TO Q.48) [21]
Yes...................._____-2

47. How long is that quarantine period?

__ __ Months [22-23]

[NEXT PAGE]

RECORD KEEPING

48. Do you keep records that would permit you to identify the specific donor for any specific pregnancy?

-------- No.............. ____-1 (SKIP TO Q.51) [24]
Yes............. ____-2

49. Do you keep records for each donor of:

	No	Yes	
Number of women inseminated....................	____-1	____-2	[25]
Number of pregnancies achieved..................	____-1	____-2	[26]
Number of children born..........................	____-1	____-2	[27]
Physical examination..............................	____-1	____-2	[28]
Family genetic history............................	____-1	____-2	[29]
Follow-up examinations............................	____-1	____-2	[30]

50. Would you permit access to donor records, including the name of the donor, only excluding the name of the donor, or not at all, to:

	Access with Name	Access Without Name	No Access	
Donor..........................	____-1	____-2	____-3	[31]
Recipient......................	____-1	____-2	____-3	[32]
Recipient partner.............	____-1	____-2	____-3	[33]
Offspring of insemination......	____-1	____-2	____-3	[34]
Public health department.......	____-1	____-2	____-3	[35]
Research scientists............	____-1	____-2	____-3	[36]
Judicial requests..............	____-1	____-2	____-3	[37]

QUALITY ASSURANCE

V

51. Are you aware of any specific professional guidelines or suggested procedures for the selection recipients or donors for artificial insemination?

-------- No............ ____-1 (SKIP TO Q.54) [38]
Yes............ ____-2

52. Have you adopted any of these guidelines or procedures as your protocol for artificial insemination?

-------- No............. ____-1 (SKIP TO Q.54) [39]
Yes............ ____-2

53. What is the name of those guidelines that you use?

____ [40]

V

[NEXT PAGE]

QUALITY ASSURANCE

54. How adequate do you think that present professional practices of artificial insemination are in terms of protecting the:

	More than Adequate	Adequate	Less than Adequate	
a. Recipient's safety........	____-1	____-2	____-3	[41]
b. Donor's privacy..........	____-1	____-2	____-3	[42]
c. Offspring's rights........	____-1	____-2	____-3	[43]
d. Physician's liability...	____-1	____-2	____-3	[44]

55. For each of the following agencies, would you like to see their involvement in the quality assurance of artificial insemination procedures increased, remain the same, decreased, or eliminated?

	Increased	Remain the Same	Decreased	Eliminated	
a. Local medical boards..............	____-1	____-2	____-3	____-4	[45]
b. National medical societies............	____-1	____-2	____-3	____-4	[46]
c. State public health agencies....	____-1	____-2	____-3	____-4	[47]
d. Federal public health agencies......	____-1	____-2	____-3	____-4	[48]
e. Hospital PROs.........	____-1	____-2	____-3	____-4	[49]
f. Courts...............	____-1	____-2	____-3	____-4	[50]

56. Would you tend to favor or oppose the establishment of national standards for artificial insemination for:

	Favor	Oppose	
a. Recipient screening.............	____-1	____-2	[51]
b. Donor screening by sperm banks...	____-1	____-2	[52]
c. Record keeping requirements......	____-1	____-2	[53]
d. Donor screening by private practitioners..........	____-1	____-2	[54]

QUALITY ASSURANCE

57. Do you believe that the procedures for surrogate motherhood should be regulated by federal legislation, state legislation or not regulated by legislation?

Federal law......_____-1 [55]
State law........_____-2
No law..........._____-3

58a. Have you ever encountered any legal problems as a result of your practice of artificial insemination?

No...............____-1 [56]
Yes..............____-2

58b. Could you describe generally the kind of legal problem that you have encountered?

____ [57-58]

____ [59-60]

____ [61-62]

COSTS

59. What do you estimate the average cost is to your patient (or her insurance carrier) for the consultations, examinations and testing prior to the first actual insemination? Your best estimate is fine.

$ ___.___ ___ ___. [63-66]

60. What do you estimate the average cost is to your patient (or her insurance carrier) for each subsequent insemination?

$___.___ ___ ___. [67-70]

61. What proportion of the patients whom you have treated have health insurance coverage for at least some of the costs associated with artificial insemination?

____ ____ ____ % [71-73]

62. For those who have insurance coverage, what proportion of the total costs of artificial insemination are covered by the insurance on average?

____ ____ ____% [74-76]

ST CD 7
DUP 1-5
6-7

EVERYONE SHOULD ANSWER THE FOLLOWING QUESTIONS

63. How do you feel about the following general statements concerning artificial insemination? For each statement, please indicate whether you agree strongly, agree somewhat, disagree somewhat or disagree strongly.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly	
a. Artificial insemination should be more widely used when medically indicated to treat infertility...............	____-1	____-2	____-3	____-4	[7]
b. Physician acceptance of recipients should be based solely on health issues............	____-1	____-2	____-3	____-4	[8]
c. Self insemination is a reasonable alternative to physician assisted insemination in many cases.........	____-1	____-2	____-3	____-4	[9]
d. Patient requests for artificial insemination should be honored, regardless of marital status or sexual orientation........................	____-1	____-2	____-3	____-4	[10]
e. Offspring of artificial inseminations should have a right to communicate with their genetic fathers.........	____-1	____-2	____-3	____-4	[11]
f. Patient requests for artificial insemination frequently raise moral issues for physicians..............	____-1	____-2	____-3	____-4	[12]
g. There is nothing wrong with sperm banks which specialize in donors with intellectual, artistic or athletic gifts.........	____-1	____-2	____-3	____-4	[13]

DEMOGRAPHICS

D1. How long have you been in active practice?

__ __ YEARS [14-15]

D2. What is your age?

__ __ AGE [16-17]

D3. What is your primary specialty?

General practice........___-1
Family practice.........___-2
Internal medicine.......___-3
Gynecology..............___-4
Andrology...............___-5
Obstetrics/gynecology...___-6 [18]
Surgery.................___-7
Urology.................___-8
Other (SPECIFY)
____________________..___-9 [19]

EVERYONE SHOULD ANSWER THE FOLLOWING QUESTIONS

DEMOGRAPHICS

D4a. Is your main practice, that is, where you have most of your contact with patients, office-based or hospital based?

----- Hospital based..........____-1 (SKIP TO Q.D5) [20]
: Office based ....____-2
:
: D4b. Is your main practice part of a health maintenance organization, an independent group practice, a solo practice or something else?
:
: Health maintenance organization .....____-1 [21]
: Independent group practice ....____-2
: Solo practice........................____-3
: Partnership..........................____-4
: Other................................____-5
V

D5. Approximately how many different patients would you estimate that you see on an outpatient basis during an average week?

___ ___ ___ OUTPATIENTS [22-24]

D6a. Are you engaged in medical research as well as clinical activities?

---------- No............_____-1 (SKIP TO Q.D7a) [25]
: Yes............_____-2
:
: D6b. Are you engaged in research related to infertility?
:
: No............_____-1 [26]
: Yes............_____-2
V

D7a. Do you belong to any state or national professional societies?

-------- No.............____-1 (SKIP TO Q.D8) [27]
: Yes.............____-2
:
: D7b. Are any of these fertility societies?
:
: Yes.............____-1 [28]
: No.............____-2
V

D8. Are you male or female?

Male.........____-1 [29]
Female.......____-2

THANK YOU FOR YOUR ASSISTANCE. PLEASE PLACE THE COMPLETED SURVEY IN THE RETURN ENVELOPE ENCLOSED.

Appendix C

Survey Instrument: Sperm Bank Practice

QUESTIONNAIRE: _ ________

NATIONAL INFERTILITY SURVEY

SEMEN BANKING SEGMENT

PLEASE READ THE QUESTION AND MARK THE SPACE BELOW THE QUESTION THAT MOST NEARLY CORRESPONDS TO YOUR ANSWER. AFTER EACH ANSWER CONTINUE WITH THE NEXT QUESTION UNLESS THERE IS AN INSTRUCTION TO SKIP TO A PARTICULAR QUESTION.

1. Does your organization provide homologous semen banking, heterologous semen banking, or both?

Heterologous only.... ____-1 --> SKIP TO Q8
Homologous only...... ____-2
Both................. ____-3

IF NO SEMEN BANKING, PLEASE NOTE AND RETURN THIS QUESTIONNAIRE

2. Do you require the consent of a donor's spouse or partner before agreeing to store semen?

Yes........ ___-1
No......... ___-2

3. Which of the following are cited as reasons for homologous storage?

About to undergo vasectomy....... ____-1
Fear of gamete damage due
to radiation or chemotherapy... ____-2
Fear of damaging occupational
exposures..................... ____-3
Fear of future infertility....... ____-4
Desire to have children after
death......................... ____-5
Other (SPECIFY)

__________________________....... ____-6

4. How long will you store the specimen?

_______ YEARS
As long as requested.... ____-1

5. What is the initial processing fee?

$ ________

6. What is the annual storage fee?

$ ________

7a. Do you have a protocol for disposal of specimen after the death of donor?

Yes......____-1
No.......____-2 --> SKIP TO Q8

7b. Which of the following do you normally do?

Destroy sample....................___-1
Use for anonymous donation.........___-2
Request instructions from
wife or relatives.................___-3
Other (SPECIFY)
________________________-4

7c. Would you honor instructions from the donor for post-mortem insemination of a wife or surrogate?

Yes.......____-1
No........____-2

V

8. Approximately how many semen samples for heterologous insemination do you sell per month?

___ ___ ___

None, homologous only...____-1 --> SKIP TO Q20

9a. Do you sell semen samples to recipients directly or only through doctors, clinics or other third parties?

Directly to recipients..____-1
Only through doctors....____-2 --> SKIP TO Q10a
Both....................____-3

9b. Do you require recipients to provide an accompanying physician request?

Yes....____-1
No.....____-2

V

10a. Do you reject requests for specimens if the recipient seems unsuitable?

Yes....____-1
No.....____-2 --> SKIP TO Q11a

10b. Have you ever rejected or would you be likely to reject a request for artificial insemination for a potential recipient because she was/has:

		Have Rejected	Would Be Likely to Reject	Not Likely to Reject
a.	Less than 18 years old	____-1	____-2	____-3
b.	Over 40 years old	____-1	____-2	____-3
c.	Welfare dependent	____-1	____-2	____-3
d.	Psychological immature	____-1	____-2	____-3
e.	Married	____-1	____-2	____-3
f.	Less than average height	____-1	____-2	____-3
g.	Less than high school degree	____-1	____-2	____-3
h.	Less than average intelligence	____-1	____-2	____-3
i.	Criminal record	____-1	____-2	____-3
j.	Evidence of drug abuse	____-1	____-2	____-3
k.	Evidence of alcohol abuse	____-1	____-2	____-3
l.	Evidence of child abuse	____-1	____-2	____-3
m.	Homosexual contacts	____-1	____-2	____-3
n.	Syphillis	____-1	____-2	____-3
o.	Gonnorhea	____-1	____-2	____-3
p.	Genital herpes	____-1	____-2	____-3
q.	History of serious genetic disorders	____-1	____-2	____-3
r.	Hepatitis	____-1	____-2	____-3
s.	HIV (HTLV) positive	____-1	____-2	____-3
t.	Cytomegalovirus	____-1	____-2	____-3
u.	Intravenous drug use	____-1	____-2	____-3
v.	Multiple heterosexual partners	____-1	____-2	____-3
w.	Sexual contact with AIDS cases	____-1	____-2	____-3
x.	Residences in high AIDS area	____-1	____-2	____-3

11a. Do you allow recipients or their physicians to provide specifications for a donor or not?

Yes.......___-1
No........___-2 --> SKIP TO Q.12a

11b. Which of the following donor characteristics are you normally willing to try to match, if requested:

	Willing	Not Willing
Age	____-1	____-2
Height	____-1	____-2
Weight	____-1	____-2
Eye color	____-1	____-2
Hair texture	____-1	____-2
Complexion	____-1	____-2
Body type	____-1	____-2
Race	____-1	____-2
Ethnic or national origin	____-1	____-2
Religion	____-1	____-2
I.Q.	____-1	____-2
Income	____-1	____-2
Educational attainment	____-1	____-2
Special abilities	____-1	____-2
Hobbies or interests	____-1	____-2

12. Do you allow recipients to reserve a particular donor for future use?

Yes........____-1
No.........____-2

13a. Do you offer sperm separation for preconception gender selection?

Yes..............._____-1
No................_____-2 --> SKIP TO Q14

13b. What is your average charge for this service?

$ ________

13c. In your experience, in what proportion of cases where sex selection is attempted is the selection successful?

________%

Don't Know ____-888

14. Are the following characteristics deliberately overrepresented in your inventory, deliberately underrepresented, or about normal?

	OVER REP.	UNDER REP.	ABOUT NORMAL	NOT SURE
College or graduate degree holder............	____-1	____-2	____-3	____-4
Better than average IQ.......................	____-1	____-2	____-3	____-4
Better than average occupational status/achievements......................	____-1	____-2	____-3	____-4
Greater than average height for ethnic group..	____-1	____-2	____-3	____-4
Greater than average athletic ability.........	____-1	____-2	____-3	____-4
Better than average looks....................	____-1	____-2	____-3	____-4
Better than average artistic ability.........	____-1	____-2	____-3	____-4
Member of particular religious group.........	____-1	____-2	____-3	____-4
Member of particular nationality.............	____-1	____-2	____-3	____-4

15. How do you obtain donors?

Word of mouth............................____-1
Advertisement in general interest newspapers or magazines.......____-2
Advertisement in student newspapers or magazines...............____-3
Flyers...................................____-4
Direct mail or telephone solicitation....____-5
Referral from other sperm bank...........____-6
Referral from physicians.................____-7
Other....................................____-8

16. What percentage of the inventory that you offer comes from:

Yourself................________%
Other physicians........________%
Medical students........________%
Graduate students.......________%
University faculty......________%
Hospital personnel......________%
Nonhospital personnel...________%
Andrology laboratory....________%
Other...................________%

17. How much do you pay donors per ejaculation?

$ __________

18. On average, how often do donors come to donate?

Weekly..............______-1
Monthly.............______-2
A few times a year...______-3
Annually............______-4
Less often..........______-5

19. On average, for how many years do donors continue to donate?

________ YEARS

20. Do you require any form of screening before accepting donors?

Yes, heterologous only....................____-1
Yes, heterologous and homologous.........____-2
No, neither..............................____-3 --> SKIP TO Q27a

21. Prior to acceptance as a donor, do you normally require the following from heterologous donors only, homologous donors only, both or neither?

	HETEROLOGUS	HOMOLOGOUS	BOTH	NEITHER
a. Personal medical history......	____-1	____-2	____-3	____-4
b. Family medical and genetic history..............	____-1	____-2	____-3	____-4
c. Fertility history.............	____-1	____-2	____-3	____-4
d. Physical examination..........	____-1	____-2	____-3	____-4
e. Personality assessment........	____-1	____-2	____-3	____-4
f. Karyotyping...................	____-1	____-2	____-3	____-4

22a. Do you ever require special screening for genetic defects or diseases from donors, prior to accepting them for artificial insemination?

No.................................._____-1 --> SKIP TO Q22c
Yes, heterologous only..............._____-2
Yes, homologous and heterologus......_____-3

22b. Under what circumstances do you require special screening of donors for genetic defects or diseases?

____

____

22c. Do you require any other diagnostic tests for donors prior to initial acceptance, not counting analysis of sperm?

No......................................_____-1 --> SKIP TO Q23
Yes, heterologous only..................._____-2
Yes, heterologous and homologous.........._____-3

22d. Which diagnostic tests do you require?

____

____

23. Do you normally require screening of the semen of donors for fertility or not?

Don't require screening........................_____-1
Require screening for heterologous only........._____-2
Require screening for both
heterologous and homologoous donors.........._____-3

24. Have you ever rejected a donor because he was/has:

	Have Rejected Homologous Donor	Have Rejected Heterologous Donor	Have never Rejected Donor
a. Less than 18 years old	____-1	____-2	____-3
b. Over 40 years old	____-1	____-2	____-3
c. Welfare dependent	____-1	____-2	____-3
d. Psychological immature	____-1	____-2	____-3
e. Married	____-1	____-2	____-3
f. Less than average height	____-1	____-2	____-3
g. Less than high school degree	____-1	____-2	____-3
h. Less than average intelligence	____-1	____-2	____-3
i. Criminal record	____-1	____-2	____-3
j. Evidence of drug abuse	____-1	____-2	____-3
k. Evidence of alcohol abuse	____-1	____-2	____-3
l. Evidence of child abuse	____-1	____-2	____-3
m. Homosexual contacts	____-1	____-2	____-3
n. Syphillis	____-1	____-2	____-3
o. Gonnorhea	____-1	____-2	____-3
p. Genital herpes	____-1	____-2	____-3
q. History of serious genetic disorders	____-1	____-2	____-3
r. Hepatitis	____-1	____-2	____-3
s. HIV (HTLV) positive	____-1	____-2	____-3
t. Cytomegalovirus	____-1	____-2	____-3
u. Intravenous drug use	____-1	____-2	____-3
v. Multiple heterosexual partners	____-1	____-2	____-3
w. Sexual contact with AIDS cases	____-1	____-2	____-3
x. Residences in high AIDS area	____-1	____-2	____-3

25. For each of the following conditions, would you be likely to reject a heterologous donor only if he had the condition, if anyone in the donor's immediate family had the condition, or would you not reject a donor even if he had the condition?

	Reject Only if Donor Has:	Reject if Family History	Not Reject Even if Donor Donor Has:
a. Tay-Sachs	____-1	____-2	____-3
b. Diabetes	____-1	____-2	____-3
c. Hemophilia	____-1	____-2	____-3
d. Depression	____-1	____-2	____-3
e. Asthma	____-1	____-2	____-3
f. Cystic fibrosis	____-1	____-2	____-3
g. Mental retardation	____-1	____-2	____-3
h. Obesity	____-1	____-2	____-3
i. Huntington's chorea	____-1	____-2	____-3
j. Duchenne muscular dystrophy	____-1	____-2	____-3
k. Sickle cell anemia	____-1	____-2	____-3
l. Thalessemia	____-1	____-2	____-3
m. Hypercholesterolemic heart disease	____-1	____-2	____-3
n. Neurofibramitois	____-1	____-2	____-3
o. Malignant melanoma	____-1	____-2	____-3
p. Alzheimer's disease	____-1	____-2	____-3
q. Severe astigmatism	____-1	____-2	____-3

26. Do you inform donors who have been rejected about the reasons for their rejection?

Yes........____-1
No.........____-2

27a. Do you routinely screen donors for AIDS?

Yes, all donors...............................____-1
Yes, heterologous and homologous
  donors from high risk groups................____-2
Yes, only high risk heterologous..............____-3
No routine AIDS screening.....................____-4 --> SKIP TO Q32

27b. Does your routine AIDS screening involve diagnostic tests, such as Western blot, or is it limited to self-reported medical conditions?

Diagnostic test........._____-1 SKIP TO Q28a
Self-report.............._____-2

27c. If high risk for AIDS is reported in medical history, do you conduct any follow-up diagnostic tests or not?

Yes.......____-1
No........____-2

28a. If a new donor tests negative to HIV do you quarantine semen for further testing of the donor or not?

Yes, quarantine..............____-1 ANSWER Q28b
No, don't quarantine.........____-2 --> SKIP TO Q29
Depends......................____-3 --> SKIP TO Q29

28b. How long is the quarantine period?

___ ___ MONTHS

29. How often are heterologous donors retested for AIDS?

Before each donation.........____-1
Every six months.............____-2
Annually.....................____-3
Occassionally................____-4
Never........................____-5

30. Do you tell donors if they have tested positive?

Yes.......____-1
No........____-2

31a. Would you inform the wife or partner of a homologous donor, if tests indicated that the donor had:

	WOULD INFORM	WOULD NOT INFORM	NOT SURE
a. ARC or full blown AIDS	____-1	____-2	____-3
b. HIV positive	____-1	____-2	____-3
c. Other infectious disease	____-1	____-2	____-3
d. High risk to severe genetic defect for offspring	____-1	____-2	____-3

31b. Would you inform the wife or partner of a heterologous donor, if tests indicated that the donor had:

	WOULD INFORM	WOULD NOT INFORM	NOT SURE
a. ARC or full blown AIDS	____-1	____-2	____-3
b. HIV positive	____-1	____-2	____-3
c. Other infectious disease	____-1	____-2	____-3
d. High risk to severe genetic defect for offspring	____-1	____-2	____-3

32. What is your standard charge for a semen sample?

$ __________

33. How many inseminations can be made per sample?

____

34. Do you inform donors of:

	Yes	No
a. Number of samples sent out............	_____-1	_____-2
b. Number of women inseminated...........	_____-1	_____-2
c. Number of babies born as a result......	_____-1	_____-2

RECORD KEEPING

35. Do you keep records that would permit you to identify the specific donor for any specific pregnancy?

No............. _____-1 --> SKIP TO Q38
Yes............. _____-2

36. Do you keep records for each donor of:

	Yes	No
Number of women inseminated....................	____-1	____-2
Number of pregnancies achieved.................	____-1	____-2
Number of children born........................	____-1	____-2
Physical examination...........................	____-1	____-2
Family genetic history.........................	____-1	____-2
Follow-up examinations.........................	____-1	____-2

37. Would you permit access to donor records, including the name of the donor, only excluding the name of the donor, or not at all, to:

	Access with Name	Access Without Name	No Access
Donor..........................	____-1	____-2	____-3
Recipient......................	____-1	____-2	____-3
Recipient partner..............	____-1	____-2	____-3
Offspring of insemination......	____-1	____-2	____-3
Public health department.......	____-1	____-2	____-3
Research scientists............	____-1	____-2	____-3
Judicial requests..............	____-1	____-2	____-3

QUALITY ASSURANCE

V

38. Are you aware of any specific professional guidelines or suggested procedures for the selection recipients or donors for artificial insemination?

No............. _____-1 --> SKIP TO Q41
Yes............ _____-2

39. Have you adopted any of these guidelines or procedures as your protocol for artificial insemination?

No............. _____-1 --> SKIP TO Q41
Yes............ _____-2

40. What is the name of those guidelines that you use?

____

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[NEXT PAGE]

QUALITY ASSURANCE

41. How adequate do you think that present professional practices of artificial insemination are in terms of protecting the:

	More than Adequate	Adequate	Less than Adequate
a. Recipient's safety........	____-1	____-2	____-3
b. Donor's privacy...........	____-1	____-2	____-3
c. Offspring's rights........	____-1	____-2	____-3
d. Physician's liability.....	____-1	____-2	____-3

42. For each of the following agencies, would you like to see their involvement in the quality assurance of artificial insemination procedures increased, remain the same, decreased, or eliminated?

	Increased	Remain the Same	Decreased	Eliminated
a.Local medical boards................	____-1	____-2	____-3	____-4
b.National medical societies.............	____-1	____-2	____-3	____-4
c.State public health agencies.......	____-1	____-2	____-3	____-4
d.Federal public health agencies.......	____-1	____-2	____-3	____-4
e.Hospital PROs.........	____-1	____-2	____-3	____-4
f.Courts................	____-1	____-2	____-3	____-4

43. Would you tend to favor or oppose the establishment of national standards for artificial insemination for:

	Favor	Oppose
a. Recipient screening..............	____-1	____-2
b Donor screening..................	____-1	____-2
c. Record keeping requirements......	____-1	____-2

44. Do you believe that the procedures for surrogate motherhood should be regulated by federal law, state law or not regulated by law?

Federal law......______-1
State law........______-2
No law...........______-3

45a. Have you ever encountered any legal problems as a result of your practice of artificial insemination?

No..............____-1 --> SKIP TO Q.46
Yes.............____-2

45b. Could you provide a general description of the kind of legal problem that you have encountered?

____

____

46. How do you feel about the following general statements concerning artificial insemination? For each statement, please indicate whether you agree strongly, agree somewhat, disagree somewhat or disagree strongly.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly
a. Artificial insemination should be more widely used to treat infertility..............	____-1	____-2	____-3	____-4
b. Physician acceptance of recipients should be based solely on health issues...........	____-1	____-2	____-3	____-4
c. Self insemination is a reasonable alternative to physician assisted insemination in many cases.........	____-1	____-2	____-3	____-4
d. Patient requests for artificial insemination should be honored, regardless of marital status or sexual orientation........................	____-1	____-2	____-3	____-4
e. Offspring of artificial inseminations should have a right to communicate with their genetic fathers.........	____-1	____-2	____-3	____-4
f. Patient requests for artificial insemination frequently raises moral issues for physicians..............	____-1	____-2	____-3	____-4
g. There is nothing wrong with sperm banks which specialize in donors with intellectual, artistic or athletic gifts.........	____-1	____-2	____-3	____-4

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